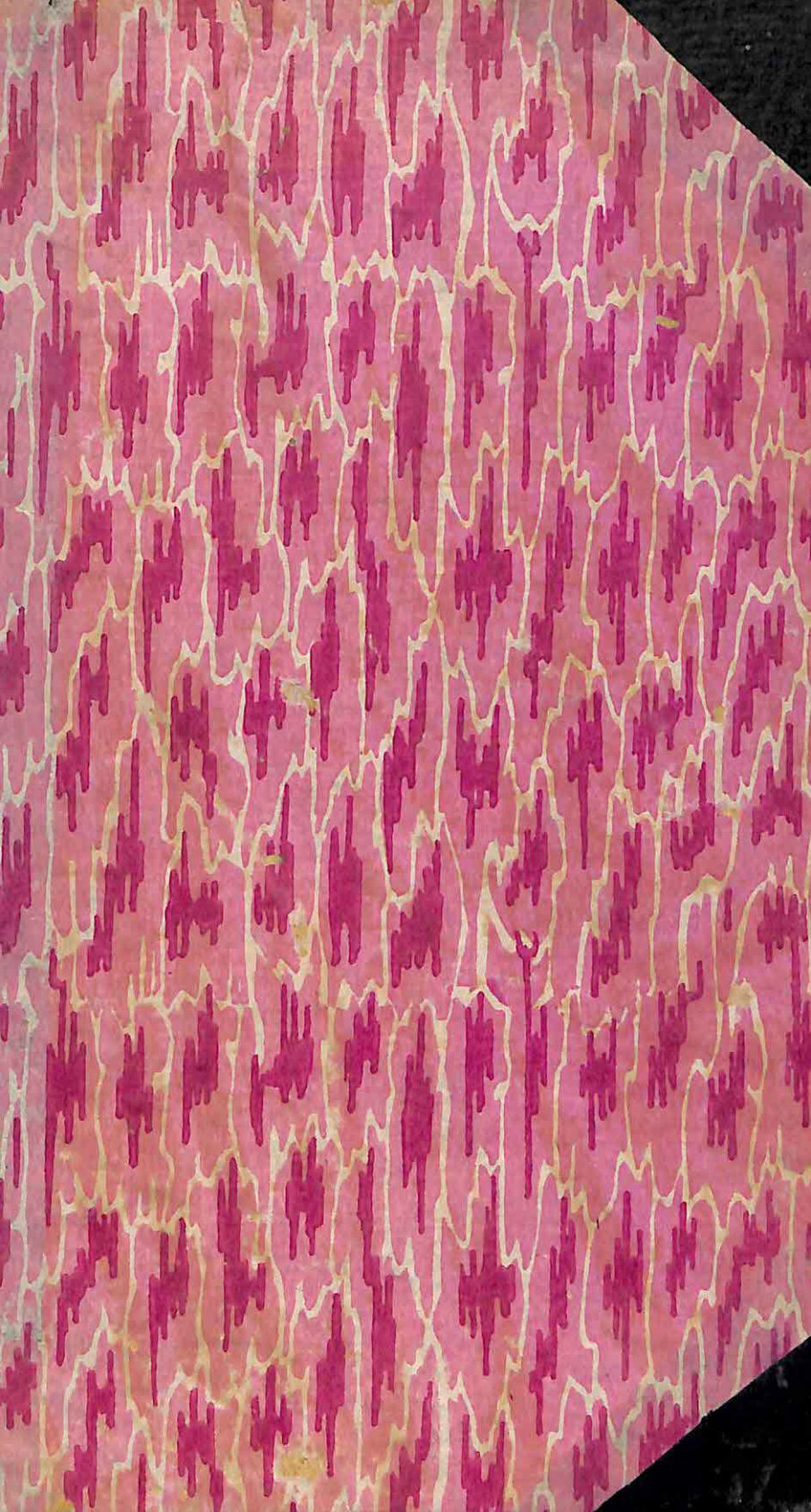




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EDUCATION BY RADIO SCHOOL BROADCASTING

by ROGER CLAUSSE

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U N E S C O
P A R I S 1 9 4 9

*Published by the United Nations
Educational, Scientific and Cultural Organization
Printed in France by M. Blondin
1st impression 1949
2nd impression 1951
Copyright by Unesco, Paris*

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F O R • E • W O R D

In sponsoring this series of studies on specific problems of mass communications, Unesco is complying at once with its constitutional obligation to "further by all possible means the use of the instruments of mass communications in the work of advancing the mutual knowledge and understanding of peoples", and with the repeatedly expressed desire of experts that Unesco should promote and sponsor the publication of technical and sociological works dealing with mass communications questions.

Surveys of the press, film and radio in the world have shown that side by side with purely material needs, which are linked up with the economic and technical development of each country or region, there exists a wide need for knowledge of the use that can be made, and the abuses that must be avoided, of these powerful means of reaching the mind, of influencing opinions and the way of life, of modern man.

The series covers a wide ground, ranging from the professional training of those who work in press, film and radio to the organization of educational radio services, the equipment and operation of mobile cinemas, and the production, consumption and demand for paper for reading material. But all these studies have this in common, that their aim is to provide practical information and, in some cases, advice for all whose interests or whose work lie in the field of mass communications, and thus to spread knowledge of the highest standards that are being attained and the new techniques that are being evolved.

To prepare these studies, Unesco has called upon specialists throughout the world. It is recognized that some of the subjects may be controversial, but the authors have been left completely free to express their own opinions and to speak with the full authority of their personal experience. Even should they provoke disagreement, it is felt that only beneficial results can stem from the stimulation of thought and the casting of new light upon these different subjects. Among the dangers which

can beset the press, the film and the radio, one of the greatest perhaps is that of routine and stagnation.

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The use of radio as an instrument of education is of special concern to Unesco. By its nature it can bring to the teacher isolated from the academic and social centres of the country, often coping single handed with a rural school which includes children of all ages, a knowledge of new educational methods, and a wealth of information and illustrating material which can bring life to his class and immensely stimulate his own teaching.

This service which radio can bring to education is of particular value in those countries most lacking in the usual educational facilities, where schools are scattered and teachers overworked and often out of touch one with another. Yet, though school broadcasting is certainly not new in the world of today, we find that it is precisely those countries which are not lacking in educational facilities which have developed the most complete and most elaborate programmes of school broadcasts. In the main, countries with fewer resources have hesitated to make full use of radio in education.

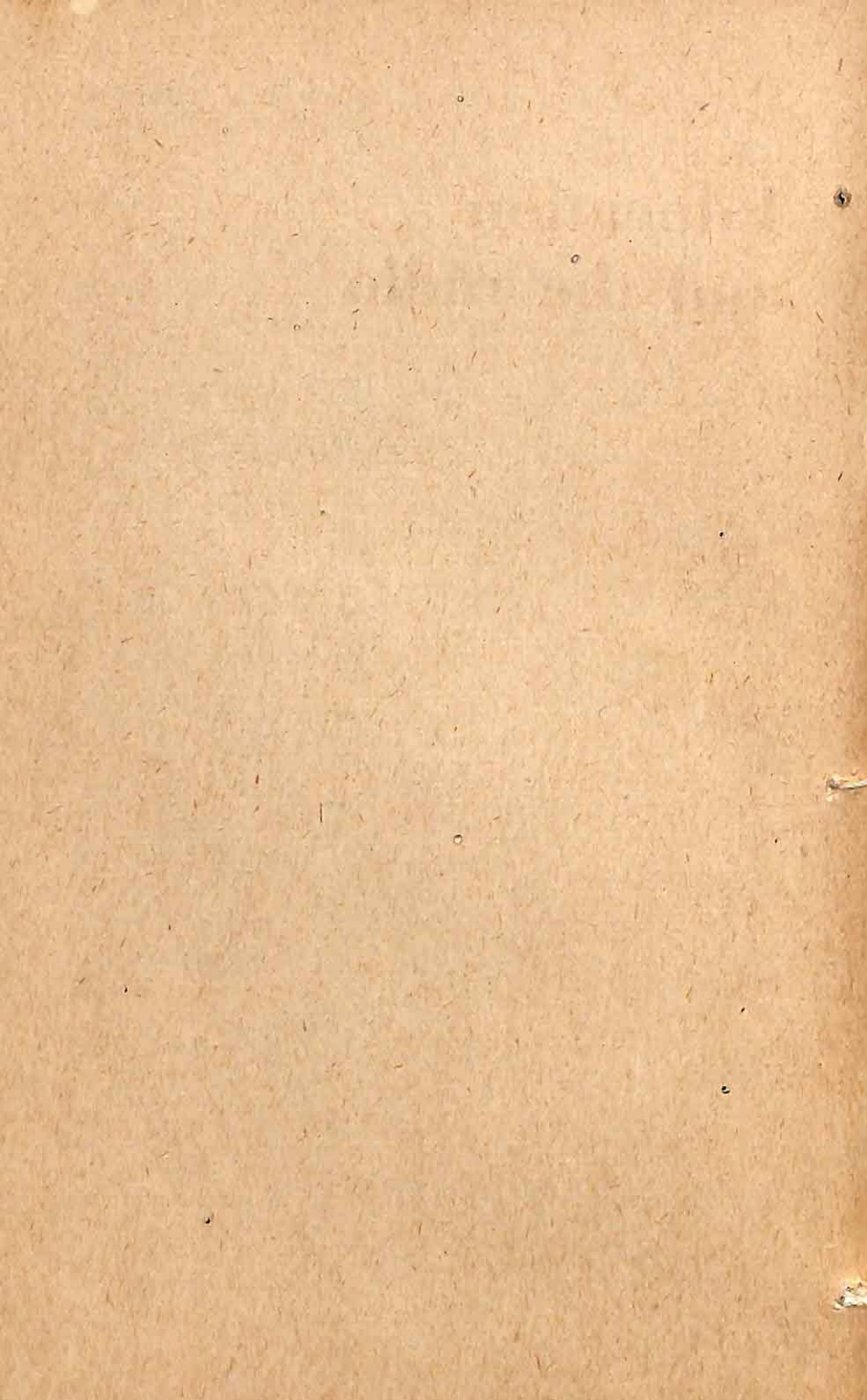
The author of this book, Dr. Roger Clausse, has had experience both as an educator and as a broadcaster. As the first, he has long studied modern educational methods; as the second, he was entrusted with the re-organization of the Belgian School Broadcasting Service after the second world war. In this book, which is the fruit of careful study of the many experiments that have been made in educational radio, he analyses the qualities and limitations inherent to radio as a means of expression and the way in which they must determine its use in education, irrespective of the particular forms in which education and the radio may be organized in any given country.

Mr. Clausse's original manuscript was intended for a non-specialist public. For inclusion in this series of studies, which is intended mainly for professionals in the field of mass communications, a condensed version has been prepared by the Secrétariat omitting details on the more elementary aspects of the question.

It is hoped that this work may serve as an encouragement to the many countries now contemplating the organization of school broadcasting services, and will help them avoid the mistakes and benefit from the experience of the early pioneers.

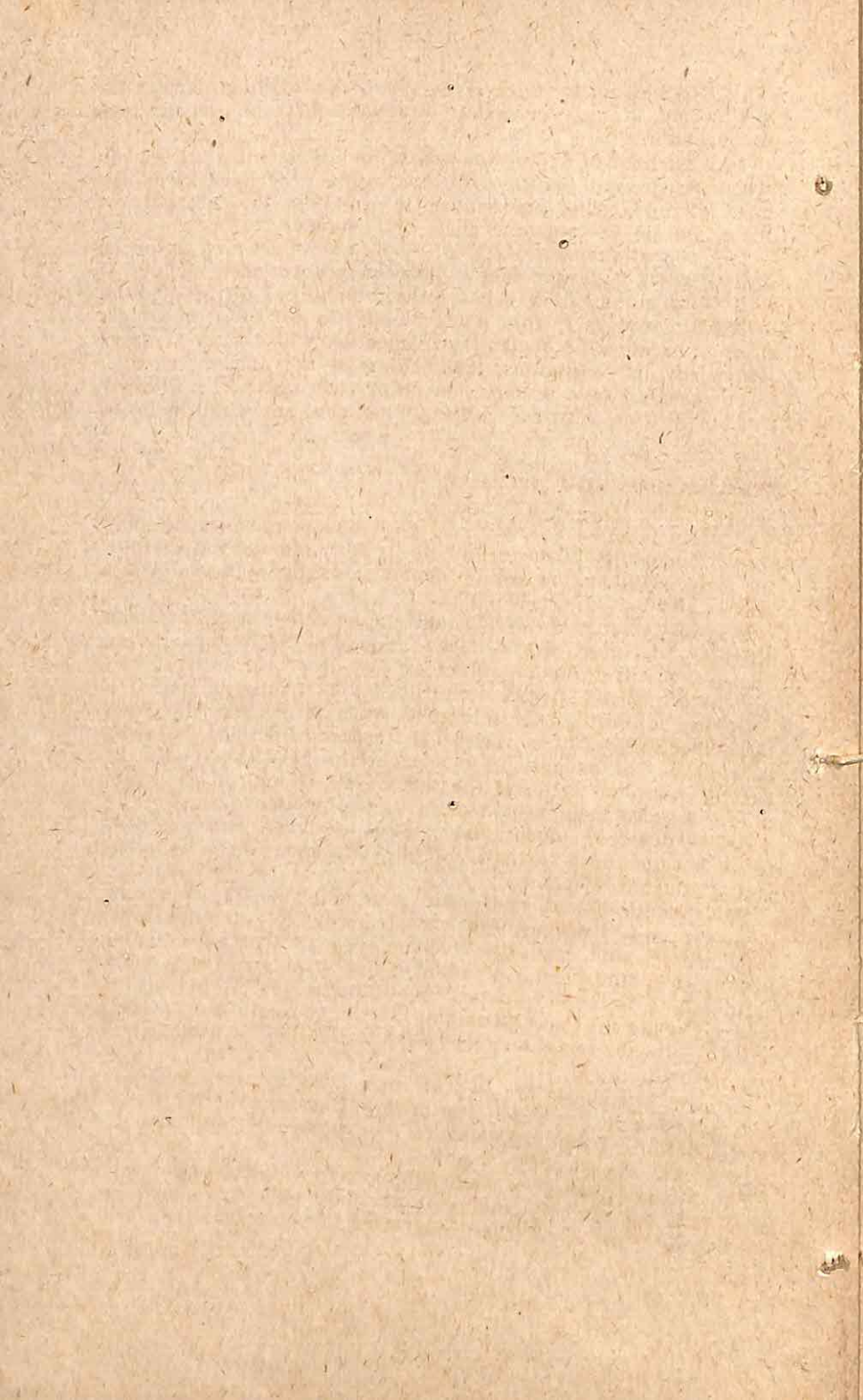
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G E N E R A L I N T R O D U C T I O N

Education and the radio



RADIO has, in twenty-five years, gained a leading place in the world. It has penetrated into the home and become one of our habits.

As a medium of expression whose foundations are the spoken word, music and sound, radio has assumed or been given the most diverse tasks; amusement, information, the interplay of ideas, public service, education and culture.

The educational use of radio is only one of its many aspects, and there is a danger that if its rôle is not clearly defined it will be misused, either because the possibilities of the medium will tempt the users into fields which are not those of education, or because the demands of education will call for services which, by its limitations, the medium is not able to provide.

The greatest risk of confusion occurs when one tries to draw the border line between radio's educational and cultural tasks.

Education and culture

The radio is often said to have an "educational mission", and this is frequently taken to include its activities not only within the field of education proper, but also in the wider and less clearly defined sphere of culture.

It is often not clear what should be classified as culture, and what as education. But a misunderstanding as to the aims of broadcasts will ultimately affect the broadcasts themselves; they will be no longer strictly educational nor strictly cultural.

On the cultural side less harm is done, as the very nature of the subject allows of considerable freedom of action. The same is not true of education, where certain conditions must be strictly complied with, if the whole educational effort is not to lose its effectiveness and often its justification.

A broadcast is educational if it is designed and executed for a specific didactic end and fits into place in a coherent and graduated whole.

The didactic object, system and graduation are the necessary elements and distinguishing characteristics of all education; they are its *sine qua non*. It is not enough that a particular broadcast should "teach or educate" for it to qualify as "educational"; a necessary further condition is that it be one of a series along the same lines and that its content, form, media, and place in the series be determined in the light of pedagogical requirements.

Cultural broadcasts are free of such strict requirements; the sole criterion for so classifying them is that they merely transmit something from a portion of our intellectual and artistic heritage or seek to create a new art.

The distinction between educational and cultural broadcasts is of vital importance. Radio programmes may be defined as *educational* when their three characteristics are that they are

didactic, systematic and graduated; and as *cultural* when they merely transmit a cultural subject or present an artistic creation for its own sake.

Education through the radio

Popular Education Radio and School Broadcasting

Radio's educational task has two branches; the first is concerned with listeners outside the school; and the second with pupils organized in classes. The first is Popular Education and the second School Broadcasting.

Although both are educational in character, a clear distinction between them is desirable. There is in fact a wide difference in the external conditions in which they operate, the persons to whom they are directed and the nature of their goals; it follows, therefore, that the form they take, the methods they employ, their place in the programme and the circumstances in which they are prepared are quite distinct; it is thus desirable to deal with each separately.

Popular education broadcasts are generally directed to adults in their own homes and designed to furnish them with general or technical knowledge that they were unable to acquire during their school days, or that they have since lost.

School broadcasting, on the other hand, arranges educational broadcasts for homogeneous groups of pupils working under the supervision of a teacher.

School broadcasting is for pupils, generally children or young people of school age who listen in as a body. They are of the same age group, on the same mental level, and have the same interests. Each such group is accordingly homogeneous in character. Lastly, school broadcasts are followed up by a teacher whose remarks are designed to secure the best educational yield from the subject broadcast.

It will be noted that the factor of "listening in class or auditorium" has not been included in the definition of school broadcasts. As a general rule, in primary education, the group is together in class at the time of the broadcast; this condition, however, does not invariably obtain in secondary or university education, where listening may well take place at home. In the latter case the group reassembles in class later on, under the supervision of a professor, for the educational "follow-up" of the broadcast.

Justification of educational broadcasting

Radio is in practice providing education. How does it justify this assumption of a task which should logically be reserved for those normally responsible for education, i.e. Education

Ministries, recognized associations or academic authorities? The justification lies in the requirements and needs of mass education. No one denies that the industrial, technological and scientific revolutions of last century lie at the root of the social upheavals of today.

The problems of production, distribution and consumption, like those of political, social and cultural organizations, have become exceedingly complex. Moreover, the traditional systems, both spiritual and material, tend to oppose the work of transformation and adaptation, and to act as a brake.

As lately as yesterday, mankind, faced with personal or social problems, could turn to tradition, the code of thought and action that preceding generations had evolved. The break with the past took place at the end of the eighteenth century and today men must seek within themselves the ability to form sound judgments, issuing in fruitful action in a society of singular complexity.

It was for this reason that, to replace professional, intellectual, ethical and political traditions, the nineteenth century was forced to organize a system of education and instruction open to all men. Hence arose the problem of mass education, of endowing all men, whatever their place in society, with the general and technical knowledge, the methods of thought and action, calculated to give an adequate return in a democratic industrial society.

The total of learning necessary to do this is encyclopaedic, and the traditional school, with the best will in the world, could not compass it. The schools were accordingly forced to modify their methods, revise their programmes and modernize themselves in an endeavour to cut out dead wood and adapt themselves to new needs.

Despite this, they could not meet the everygrowing requirements of mass education. Parallel with them there grew up educational centres of a new type: youth movements (e.g. Scouts), popular education associations and educational groups of every description. Thus, formal education is carried on outside the school, both during and long after the school period. The work begun by education in the schools is today continued and extended by popular education.

In addition, the school admitted to its classrooms new means of expression such as radio. The latter brings to the necessarily narrow confines of the school an echo of the concerns and activities of daily social life; it also opens to the pupil the field of culture. In current affairs and culture alike, it offers the teacher an invaluable auxiliary instrument.

Popular education, too, has had to seek the aid of instruments adapted to mass action. Its traditional methods of lectures, concerts, conducted tours, etc. have proved inadequate. Popular education must have at hand means of expression that can reach the masses, radio and film.

The educational services within broadcasting are attaining increasing importance and are tending to become independent of the remainder. They have assessed their means and enlarged their sphere of action; they offer the widest variety of broadcasts in the fields of technical and general education alike; they are concerned with all ages and all groups.

It is clear that educational broadcasting meets needs which are satisfied neither by the organizations nor by the means that tradition allows. Broadcasting has annexed a place left empty in the structure of mass education.

Broadcasting as a means of expression

Broadcast transmissions are an auditory composite, whose elements are the spoken word, music and sound.

The three elements can, of course, occur in isolation, and further, their expressive values are not equal; for instance, sound alone can obviously seldom have definite significance; it is no more than a secondary element which supports or annotates the meaning of the spoken word or music; it acquires evocative power only in combination with the other elements. Nor do the latter in isolation constitute a truly "radiogenic" broadcast; such broadcasts as concerts, lectures or broadcasts from theatres are imperfect forms.

The truly radiogenic broadcast is born of a combination of the three elements of the spoken word, music and sound.

As a means of expression, broadcasting has certain outstanding advantages. The first that comes to mind is its power of persuasion. To the attentive listener it brings its message with a conviction and directness that is shared by no other medium. And this power is enhanced by the fact that neither distance nor barriers can prevent its reaching its audience.

For the listener, there is the advantage of simplicity: a box that can be tucked under the arm, one or two knobs, an aerial—the whole at minimum cost and calling for no effort in operation.

And because radio has become part of our homes—almost part of ourselves—to be turned on automatically and at any time, it has gained another immeasurable advantage: that of continuity of action. With it, time is no longer at a premium; it can repeat its message as often as necessary for it to be heard and understood.

Of course, broadcasting has limitations. If errors, likely to prove particularly harmful in the work of education, are to be avoided, those limitations must be clearly known.

Of broadcasting's several weaknesses, five merit the closest scrutiny.

Broadcasts are perceptible by one of our senses only. Contemporary teaching practice attaches special importance to the proposition that the chances of any notion being under-

stood and fixed in the memory increase proportionately with the number of senses and activities called into play. This fact, which daily experience confirms, condemns the passive verbal instruction of other days, and includes broadcasting in that condemnation as implying purely oral expression and passive reception.

But this condemnation is not final. Despite its many faults, the teaching of former days fulfilled its task by training worthwhile leaders. It had one method of sovereign value—though no one could call it economical—that of repetition, which corrected the failures of the ear. The wireless, too, has the same resource, and, as we have seen, does not hesitate to use it.

Nevertheless, despite this corrective, the employment of a single sense only constitutes a weakness which must and can be compensated, partially at least, by recourse to outside aid such as printed scripts of broadcasts, action by the teacher, and post-broadcast follow-ups.

There is no means of compelling the choice by the listener of one broadcast in preference to another. Whether we like it or not, it is always open to the listener to turn the knob. Innumerable are those who, with their hand on the knob, patiently explore the dial for a lively air, an amusing sketch, a popular comedy or dance music, and who play blind man's buff with symphonies, the classical theatre, and broadcasts of quality.

However, the loop-hole offered to laziness finds in laziness itself at least a measure of correction. The listener gets tired of turning the knob, and it sometimes happens—now that the miracle of broadcasting has lost its pristine attraction—that he leaves his set on a particular wave length and thus absorbs, though with a degree of peevishness, the odd broadcast of educational or cultural worth.

Moreover, today all stations deliberately mix education with ordinary amusement. On balance, the share of education and culture has grown larger and that of mere amusement smaller in the same proportion. The choice is necessarily limited, and the time swiftly comes when the listener has to put up with broadcasts of the highest quality... for which in the end he develops a taste.

Reception conditions for broadcasts are imperfect. Here I do not refer to physical disturbances such as fading, interference, etc. The point is that when the listener automatically turns on his set he is not in a "state of grace". He has had no decision to make and there has been no preparation, none of those preliminaries which, when a person goes to a play or concert, contribute to building in him a special frame of mind.

A broadcast, on the other hand, surprises the listener in the midst of his daily occupations, while he is reading his paper, or chatting with his family, surrounded by other people who are not interested or are concerned with other things. He lacks

the vision before his eyes, the magnetism of the living person, whether the actor on the stage, the lecturer at his reading-desk or the conductor before his orchestra. The receiving set today no longer holds any mystery; it is only an everyday piece of furniture and the listener's attention will be distracted by the smallest discordant sound.

It may be asked whether so grave a weakness of broadcasting is in fact incurable; the remedy lies in collective listening. This condition obtains automatically in the school, and may be achieved outside the school in listeners' clubs. Up to a point, collective listening restores the state of grace.

Broadcasting is suggestive rather than instructive. The reasons for this are three: firstly, there is the very structure of a broadcast, with rapid alternations of speech, music and sound, where rhythm and contrast are imposed by the need to awake and retain an attention which the slightest thing can destroy; next comes the essentially ephemeral nature of the broadcast; lastly, there is the impossibility of time for thought during a swift-moving broadcast, where the thread is very quickly lost.

For that reason broadcast productions should be suggestive, evocative, mainly confining themselves to arousing interest. When they seek to become instructive and give full satisfaction to the interest they arouse, they become heavy and indigestible, requiring from the listener an abnormal effort of attention simultaneously with a very wide degree of general culture.

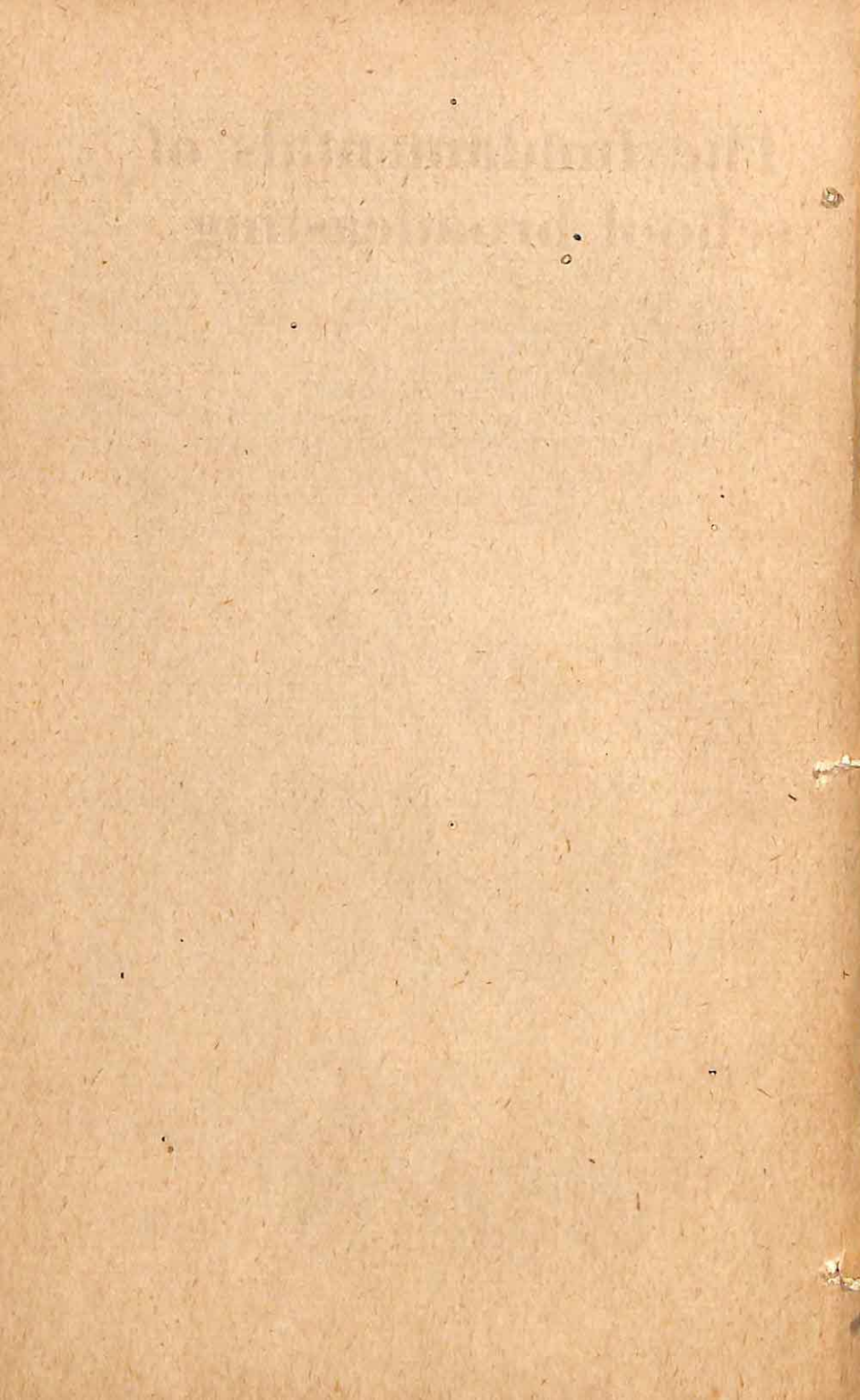
Its evocative nature shows clearly that broadcasting will never be able to replace the teacher, and will never be more than one of the means available to the latter to make his teaching more varied and more vital. With the exception of a few very rare instances, the educational broadcast can never claim to give systematic, and still less comprehensive, instruction. It will be essentially a 'bait' for interest; it will arouse curiosity and provide suggestions for action in the educational field, which the teacher will lay hold on and incorporate in his teaching.

The lack of homogeneity of the radio audience is a heavy handicap. This has its roots in the non-existence of a collective listener-psychology. The individuals remain isolated from one another without the contact which releases a current of group feeling and sympathy. The hearer reacts to the broadcast in terms of his own individual psychology and, in particular, under the impulse of his personal tastes; even his listening habits reflect no more than the fact that he is a man on his own, separated from his fellows by distance and obstacles.

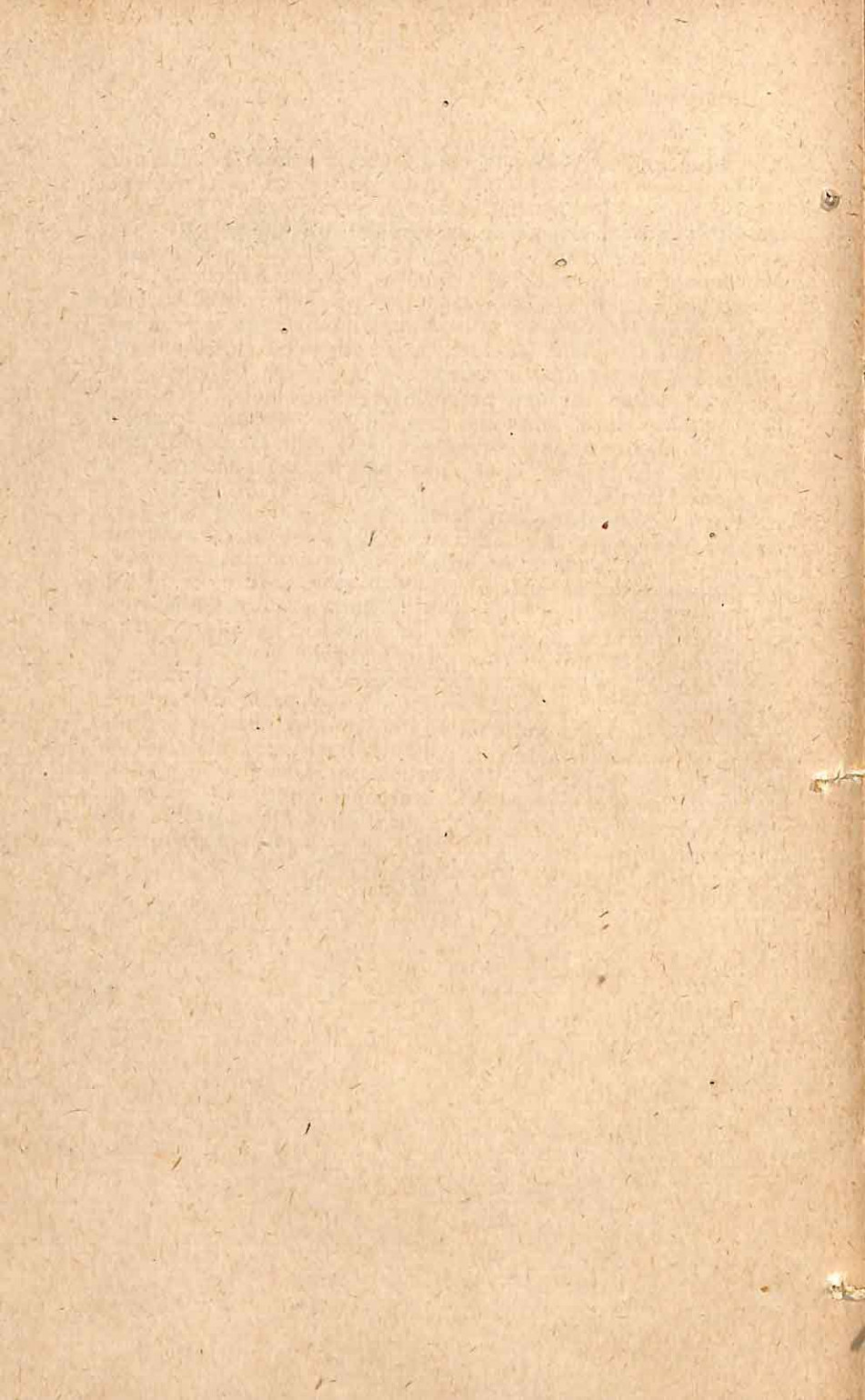
Faced, then, with such a mosaic of tastes and needs, whose common denominator is expressible only in general or in contradictory terms, it is difficult to draw up programmes appealing to every taste. All tastes exist in nature, but not all are present at the same moment. How indeed—with the radio audience as it is today—can the emergence of those tastes be brought about at a pre-determined moment?

In its own terms, Radio has been faced with the problem of squaring the circle, of broadcasting programmes which shall satisfy everyone at the same time, through the same media, without the sub-stratum of any community of tastes and interests.

But we must not be too pessimistic about educational broadcasting, which is directed to more homogeneous groups. In schools the degree of homogeneity is high, and a collective listener-psychology is evoked without difficulty: in the case of listeners to popular education broadcasts—even though they are scattered and separated one from another—they are led before the loudspeaker at the desired time by a common interest or taste. Thus this weakness of broadcasting—or more properly of the radio audience—is not decisive as regards education; up to a point we can disregard it.



The fundamentals of school broadcasting



Introduction

In some countries sufficient experience in school broadcasting has now been acquired for it to be possible to lay down the general lines of the institution and of its methods. The part it can play and the means at its disposal are known. Its exact place in the structure of education and its relations to other instruments of contemporary teaching can be pointed out, and a large-scale synthesis undertaken, which will consolidate the gains achieved and serve as a starting-point for new progress.

Such an undertaking would be of great value to the numerous countries now taking the first steps in special techniques of school education through broadcasting; it is hoped, too, that this synthesis may serve as a guide for educators engaged in the struggle against ignorance and illiteracy, and help avoid the errors and hesitations which made the path of the pioneers so hard.

Even those countries with some experience in this field may derive advantage from a summing-up designed to bring out the positive results, indicate the difficulties encountered, and detail the problems so far unresolved. The experiments conducted in different areas are still too little known; only seldom are they communicated to the outer world so as to afford useful lessons and that general rules may be established.

The school broadcasts here discussed are those forming a particular section of the activities of a national or regional transmitting-station additional to the normal tasks of broadcasting (news, entertainment, public service, etc.) and put on the air for the benefit of all the schools of a country or region. This is the normal type of school broadcasting in all countries except a few as for instance in the United States, where another type is carried out for and by schools or groups of schools, with their own transmitter.

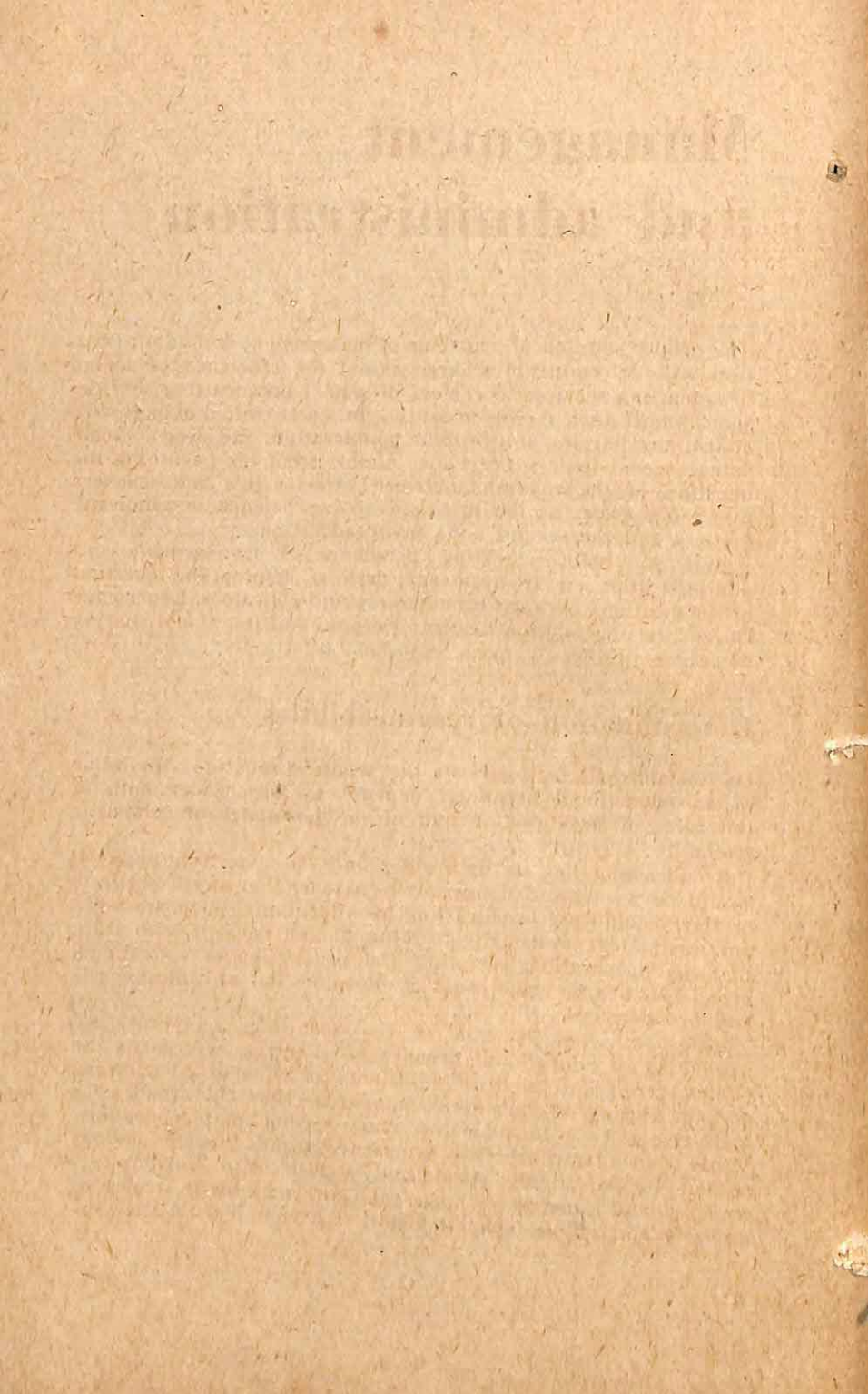
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Management and administration

The proper solution of problems of management and administration will determine to a large extent the efficiency of school broadcasting services. Directors of school broadcasting services soon found that it was essential to enter into contact with educational circles, secure their co-operation, and even to some extent accept their supervision. Almost from the beginning the question of the relations between broadcasters and teachers inevitably arose, as the first had no competence in scholastic matters and the second none in broadcasting.

And so, before tackling problems of management and administration, it is necessary first to resolve the question of the relations between broadcasters and educators. Experience shows that the solution lies in a rational and functional sharing of responsibilities.

Determination of responsibilities

One established fact governs the whole discussion: the value of an educational broadcast depends on observance both of the rules of broadcasting and of the postulates of scholastic method.

Broadcasting has its own rules and its own techniques. It would be wrong and dangerous to assume that any Tom, Dick or Harry could use broadcasting for educational purposes without methodical, systematic training. It can be said with truth that the preparation, scripting and production of educational broadcasts are the sphere not of educators but of radio experts and broadcasters.

However, what is true of the planning, scripting and producing of educational broadcasts is untrue as regards the choice, scope and relative importance of educational subjects, and the raising of educational standards. Here the broadcaster must give place to the educator, whose special competence, born of his training and practical experience, makes him the obvious person for so highly specialized a task. The syllabus (its contents and progressive stages) is governed by the rules of teaching and scholastic methods; it is a technical task requir-

ing specialized knowledge, aptitudes, intuitions and perceptions. Here the perfect mastery of the art of broadcasting would be of no avail; what is wanted is a wide and detailed knowledge of the theory and practice of teaching. Drawing up the syllabus calls for the science and art of the educator.

To sum up, therefore, it can be said that the syllabus must be drawn up by the teachers, but the broadcasts must be prepared by the radio specialists.

Such a shaving of responsibilities in school broadcasting raises the question of co-operation between broadcasters and teachers.

With a little good will, confusion or overlapping between the syllabus and broadcast sides should rarely occur. The two spheres of work are clearly defined in terms leaving little room for discussion. Broadcasters, aware of their lack of scholastic qualification, will accept the teachers' directives and advice in all matters affecting the subject-matter of teaching, the standard to be attained according to age and group, and the rate of advance. In their turn, teachers will bow to the special knowledge and skill of broadcasters as regards the 'putting over' of the material at the microphone.

Admittedly the basis of the desired co-operation is good will and understanding. Such friendly relations should naturally emanate from the fact that broadcasters and teachers serve the same ideal and seek the same ultimate goal.

The balance of forces

The fundamental problem is unaffected by whether teachers or broadcasters are completely free of state supervision, closely controlled by the state, or responsible to a board of management between them and the state. The nature of the relations between the state, educators and radio organizations is essentially a consequence of the political structure of the nation.

Questions of management and administration must be discussed apart from any political considerations—which must be accepted as fact—and these problems resolved with an eye solely to the interests of School Broadcasting and in the light of the numerous and various experiences of the pioneers during the last twenty years.

MANAGEMENT AND ADMINISTRATION

The problem may be summed up as that of achieving a balance between the education authorities, whether state or private, and the radio organization, independent or controlled. The education authorities possess the educational science; the radio organization holds the secret of microphone technique.

It is therefore possible to share out the work without danger

of overlapping: each party is qualified for a specific task, and the ultimate aim of each is the same.

The experience of many countries demonstrates that the balances of forces between the education authorities and the radio can best be achieved in a joint board of management.

The Board manages School Broadcasting and is responsible for the general planning of ideas, programmes and broadcasts. It lays down the educational policy, draws up the table of subjects, fixes standards of knowledge, determines the time and duration of broadcasts, supervises the form they take and checks their results.

Consisting of equal numbers of representatives of both parties, the Board is the best instrument of management, because its members are experts; it is the best safeguard for school broadcasts, because it bears in mind the interests both of education and of broadcasting.

Whatever the political structure of the country and the respective places in it of education and broadcasting, an evenly balanced board of management for school broadcasts is essential for the safeguarding and reconciling of all the interests concerned. By including representatives of the school authorities and of the broadcasting organization it makes it possible for the state, the school and broadcasting to make themselves heard and to secure respect for their legitimate demands.

The Board of Management is the body responsible for the planning, direction and supervision of school broadcasting. Its executive instrument will be a special service within the general broadcasting organization.

This service comprises administrative, technical and studio staff (producers, studio managers, announcers, etc.), who carry out the Board's decisions and produce the school programmes along the lines previously laid down. The service's work lies mainly in the studio and before the microphone; it actually makes the broadcasts. That is its essential task and accordingly it is a task for radio experts, although its broadcasts are directed to children and young people in the schools.

It is therefore important that the executive school broadcasting staff should either be a part of the general broadcasting organization or at least that it join in its daily life. Otherwise it would swiftly get out of touch with general broadcasting activities, and lose ground because it could not profit by the experience of the other services.

A regular two-way flow of ideas must be maintained between the school broadcasting and the other services. This is the more important since school broadcasts are a microcosm of all broadcasting, drawing their material from the most diverse sources (news, entertainment, culture, etc.) and using all types of technique (commentary, dramatization, concerts, talks, etc.) By intimate relations with all the services of the organization and by closely following the general programme, the school

broadcasts staff often find opportunities to learn, to keep in touch, or to improve.

The school broadcasting staff

The recruiting of a qualified staff for a task requiring the technique of broadcasting and whose aim is educational, is one of the most difficult problems facing the school broadcasting organization.

Once the Board of Management has laid down the programme, time-tables, type of schools for which the different broadcasts are intended, their educational standard, starting-point and objectives, and thus determined the general conditions governing the work of the school broadcasting service, the executive staff comes into the picture. What is its function? What knowledge and aptitudes are required for proper discharge of that function?

PROFESSIONAL REQUIREMENTS

The first step is to assemble the material called for by the programme and to collect full and reliable documentary background. This requires a very broad general culture of the kind normally obtained through higher academic studies. Admittedly, one is not entitled to expect a staff with encyclopaedic training covering all the subjects of instruction; however, university education would seem to be desirable by reason of the extent and variety of subjects it combines, and, above all, of the methods of work and research which it implies. A school broadcasting staff with a university background will be able to surmount all programme difficulties, either by drawing on their own knowledge or by reliance on sound methods of research.

The range of school broadcasting is very wide. It is not limited by a narrow detailed syllabus, like class-teaching in schools. It is a complementary form of education, which supplies the school with material drawn from almost every branch of human knowledge, whether contemporary or a part of the common heritage of civilization, and explores for educational ends the whole vast field of learning and action. Thus it requires from its servants the highest culture and the fullest education.

For this reason it is only fair to demand that the producers of school broadcasts give evidence of a general education of a university standard.

The raw materials for a broadcast are first collected, listed and cut to shape. They must be put into 'radio form' without losing sight of the broadcast's educational purpose.

There are two separate steps which are in fact closely combined in the productions of an educational broadcast, pre-

suppose different qualities; the two can therefore be studied separately.

The quality of an educational broadcast is governed by due observance rather of the laws of creative broadcasting than of the rules of scholastic method. The broadcast will be good, i.e. understandable, attractive and of lasting effect, if it conforms to the standards, and brings into play all the resources, of broadcasting art.

It follows that the staff of the school broadcasting service must conform to these standards and know these resources. Does this seem likely to happen if it has not had adequate experience of all branches of microphone work: news broadcasts, commentaries, literary and dramatic features? The school broadcast specialist is, by turns, journalist or reporter when dealing with current affairs; lecturer or historian when treating with scientific, literary or artistic questions, dramatist when he writes a broadcast sketch, producer and performer in the studio. He cannot afford to overlook any form of broadcast expression, for school broadcasting employs all the resources of radio.

Theoretical and practical knowledge of all the possibilities of broadcasting is essential for school broadcast producers.

Against this the degree of teaching skill required to give the broadcast its educational character remains fairly limited; it would seem indeed to be not even absolutely essential if the selection of subjects, the standard of teaching and the progressive stages have already been laid down by educational experts.

The broadcasting staff works, so to speak, to order and according to specification. All that is needed is that it should appreciate the spirit and main lines of what it is required to convey. For that, some knowledge of teaching technique and scholastic method is necessary, but experience has shown that a nodding acquaintance will suffice; it is more a matter of bearing these sides of the question in mind than knowing them through and through.

The question becomes more delicate when we pass to the stage of scripting, of composing school broadcasts. Admittedly, the general outline of the work has been laid down; the directives have been given. But it may be wondered whether, when catering for school audiences, the producer does not need, if he is to make himself understood, to have been himself a teacher? It would not appear that this is essential; witness the considerable degree of success of entertainment broadcasts for the amusement or instruction of the young. Generally speaking, these broadcasts are handled by a staff without training as teachers, but with profound knowledge of the possibilities of broadcasting.

It can be taken as proved that enthusiasm for education, instinctive understanding of children, broadcasting talent and

a general knowledge of teaching technique and methodology are the cardinal virtues of a school broadcasting specialist. Actual teaching experience can be dispensed with.

If extensive knowledge of teaching technique and practical experience have a necessary place in the school broadcasting service, that place is at the directing level. The director of the school broadcasting service will be the guide and instructor of the executive staff and will control the educational aspect of their work in its daily development. He will be the best qualified to judge of the strictly educational value of each broadcast. In a word, he will be the scholastic conscience of the service. Moreover, by his radio experience, which must be very extensive, he will ensure in each broadcast the proper balance between the dictates of broadcasting technique and educational requirements.

PERMANENT AND OCCASIONAL STAFF

A question which may profitably be asked is whether school broadcasting should be handled by permanent staff or by outside persons engaged *ad hoc*.

Obviously, constant practice gives the permanent staff a high degree of competence, to which outsiders cannot hope to attain, but it will have a natural bias against change when it has achieved a satisfactory formula; it easily loses interest in questions on which it has no special knowledge. Moreover, it must be admitted that such a staff would require at once a many-sided and extensive culture and an uncommon degree of intellectual suppleness to take sole charge of school broadcasts.

Unless numbers are large and qualities highly diversified, the permanent staff cannot by itself handle all parts of all broadcasts for the schools. The co-operation of outsiders is clearly essential. It remains to be decided how far and under what conditions.

The great weakness of the outside man is his ignorance of the radio medium. This difficulty can be resolved by the use of a permanent team of specialists carefully selected, on the principles set out above, for their competence as broadcasters and their feeling for education; each one responsible for a homogeneous category of school broadcasts on which he will specialize; calling when required on outside experts to whom he will act as a guide and counsellor in microphone technique.

Educational considerations

While school radio presents firstly a problem of management and administration and is conditioned secondly by the relations between itself and the schools, these are merely external difficulties, whose solution leaves the basic principles untouched and affects no more than the structure or success of the actual organization.

The educational considerations on the other hand are at the very heart of the matter. If an answer can be found which is valid in terms of education as such, the institution will live whatever its other difficulties.

What then is the rôle of radio in education? What is its general and particular methodology? What are the subjects which radio can most profitably handle? Those are the basic educational problems.

There are, of course, other problems, technical and educational, e.g. the planning of time-tables, the optimum length of broadcasts, the age-group most benefited by school broadcasts, etc. These, however, are not questions of principle and their solution is very largely governed by local circumstances, by special considerations and by acquired habits. They can accordingly be left aside at present.

General considerations

Following the sometimes excessive ambitions of the early days of school broadcasting, when the spirit of adventure led it into hazardous endeavours, it has come to be universally accepted that school broadcasts are essentially auxiliary, complementary instruction.

Its necessarily limited means of expression make it impossible for radio ever to replace the teacher and the school, and this is all the truer today when schools are rapidly abandoning the purely oral teaching of earlier ages in favour of the methods that make the maximum use of all the pupils' sense and energies. In fact the radio, by itself, can only offer passive instruction through the ear, and its whole methodology stems from this characteristic.

Left to itself, radio revives the passive technique of learning by the spoken word, and the almost unlimited resources at its disposal enables it to give that technique a degree of prestige and attraction which it never had before.

If school broadcasting set up as a separate type of education, it would be an obstacle to that educational renaissance towards which thousands of teachers are so earnestly striving: its popularity, wealth of idiom and ease of handling would swiftly make it a rallying point for all the forces of educational reaction.

The place of radio in education is and must be rigorously circumscribed. With rare exceptions it is not radio's part to provide broadcasts on matters within the normal reach of the schools nor on those which do not lend themselves to radio treatment.

In practice, at any rate, it is a fairly widespread error to assume that school broadcasts exist only for the pupils; in fact they exist for the teachers. Agreed that broadcasts must be suitable to the audience of school-children to which they are addressed; but they must be designed and built up in the light of the needs of the teacher who fits them into his own teaching and applies them to pre-existing educational ends. In school broadcasting the fundamental question is not: 'What does the child under instruction need? What are the subjects required to mould the pupil?' But: 'What scholastic material must be available to the teacher, for his teaching to be as fruitful as possible?' A thing to be avoided at all costs is the growth, alongside education in the schools, of a system of radio education addressing itself to the children over the head of the teacher and setting itself up as the latter's rival.

School broadcasting must therefore set bounds to its ambitions; it is no more than an auxiliary teaching method for three main reasons;

1. All subjects, however essential, are excluded which do not lend themselves to radio treatment;
2. It must refrain from doing what the teacher can do;
3. It supplies the teacher, and the teacher alone, with teaching material whose value is directly relative to the extent to which it can be utilized in the school. It is of course self-evident that it must be cast in a form suitable to its public, i.e. children in class.

Nor is this all. A more detailed analysis of the rôle of school broadcasting brings to light a further facet of considerable importance: until its application by the teacher, radio education is merely depersonalized collective instruction.

Leaving aside the teacher's knowledge of technique and his trained perception, it is indisputable that his sovereign virtue in the classroom is personality. Personality has its roots in character, intellectual qualities, and mental and physical attitudes, and gives the teacher a degree of authority and prestige which has a catalytic effect on the minds of the

children. But, for its full expression, personality needs physical presence and physical contact, for it is not merely self-assertion, it also includes the qualities of understanding and flexibility.

However original it may be, school broadcasting neither has nor can have personality. Lacking physical presence and direct contact, and an ignorance of the momentary interests and spontaneous reactions of its public, how could it bring personality to bear? Admittedly, the radio speaks with authority and skill, but it speaks into space and is powerless to adapt itself to the psychological reactions to which it has given rise or to seize hold on curiosities, interests or needs at the moment they appear. Hence the radio is incapable of making much use of the power which personality gives, and its teaching must rely solely on teaching technique and perception.

School broadcasts have a further characteristic: they neither are nor can be more than collective teaching. This is simultaneously a source of strength and weakness. Of strength, because there is no ceiling, as in a class, to the practicable number of listeners, and because it simultaneously reaches a large group of individuals; of weakness because one of the most valuable rules of contemporary teaching technique is that education should be made individual. The sociological format of contemporary teaching is indeed collective, but in practice it is highly personal. This personal approach governs alike the handling of the individual pupil and the formation of homogeneous groups. One of the most valuable talents in a teacher is that of adapting the lessons to each individual and each group of individuals. He must keep in mind both the differences and the similarities between his pupils. Whenever the lesson in class goes over the head of one or more pupils the teacher must make it 'individual' and adapt it to their different capacities; moreover there is a tendency for teachers to get right away from the class technique and to provide facilities for learning which the pupils take up of their own volition and use under the supervision of the teacher, according to his advice and suggestions.

School radio can in no circumstances take account of individuals. It aims at grasping the general tendencies and needs of the average standard of groups and at adapting its teaching so far. Radio is a lingua franca with all the impoverishments which that term implies; to be understood by all, it can address each one only in terms that he shares with the rest; the force of circumstances therefore leads radio to adopt that style and standard most likely to be within the grasp of the whole body of listeners. There is a clearly marked tendency towards levelling down, alike in form and content. Furthermore, if, despite all this striving after collective comprehension, it is still not understood, there is no succour save that of the teacher.

Because school broadcasting is depersonalized teaching not

directed to individuals, it can be no more than an auxiliary method which gives the best results when applied by the actual teacher. It is the teacher who gives each broadcast a personality and adapts it to the individuals in his class; it is he who steers it into the main current of contemporary teaching and secures from it the greatest educational yield. Without him there would be great risk of school broadcasts losing all purpose; they would be at best no more than a period of relaxation; perhaps a source of boredom, if indeed not a disorder.

Methodology of school broadcasts

It now appears possible to establish the main principles of education by the radio and to plot the main lines of a specific radio methodology.

For many years past educational broadcasts have been numerous, with an enormous and attentive audience which has not been shy in expressing its views; these broadcasts are experiments which have been rich in lessons of every sort and which still continue with the corrective of increasingly well-informed criticism.

In addition, we have available to us as research material all those broadcasts used in the course of the late war. In one sense these are educational broadcasts carried to the *n*th degree. The lessons implied in this gigantic output of war propaganda have not been lost to the works of peace. The repellent and ephemeral side of propaganda should not be allowed to rob us of its valuable precepts in the art of convincing and instructing by radio, though of course they need adaptation.

From the corpus of didactic broadcasts, war-time and peace-time alike, there clearly emerge certain general rules of radio methodology, which may properly be taken as proved, being based on adequate observation. These rules form the armature of the growing structure of radio methodology; they will be the start line for the measurement of future progress and also the framework around which to build the edifice of radio teaching doctrine.

GENERAL METHODOLOGY

We shall consider first of all those methodological rules applicable to all types of educational broadcasting and which should be consciously recollected during the planning stage.

Rule 1: *The value of an educational broadcast is essentially dependent on respect for the laws of creative radio art.*

All the indications are that the most effective types of broadcasts have been those least resembling classroom lessons and most nearly approximating to the art of broadcasting. The careful quest for "radio form" should be held to be the fundamental

methodological rule of radio. Radio is a new means of expression and, to make itself understood, demands that its laws and procedures, nay even its tricks of the trade, be respected.

For a classroom lesson to become 'radiogenic' it should undergo a major transformation, covering choice of subject-matter and its arrangement, form, delivery, proper use of the means of expression, the restatement of the visual in terms of the audible, etc. It would in fact become unrecognizable.

Rule 2: *The governing factors in school broadcasting are the syllabus, the standard of knowledge postulated, and a certain educational insight.*

The most important task of the teacher in connexion with school broadcasts is undoubtedly the drawing up of a systematic and progressive syllabus worked out in the light, firstly, of the virtues and limitations of radio and, secondly, of the school audience. Alike in the selection of the contents, in their grouping and their succession, the syllabus must take account of the interaction of education and radio to slip into its proper place.

A further point requiring the most careful attention is that of deciding the level of the instruction to be transmitted. In a classroom this question is comparatively easy to answer, as the teacher has the guidance of his class' reactions. For the radio, this is impossible. If a broadcast is over the heads of its audience, it is, practically speaking, lost effort. It is accordingly necessary that for any given category of pupils broadcasts should not be above the average level—or should even be slightly below it—to reach the greatest possible number of listeners.

It has already been pointed out that educational insight is an essential quality in the school broadcast specialists.

Rule 3: *Contact between radio-specialists and teachers should be direct, close and permanent.*

The chief risk to be avoided is that school broadcasts should develop into an independent entity with the further eventual risk of no longer 'getting the feel' of their audience and in consequence of no longer being understood by it. This peril is the greater in that we have already accepted the need for a specialized staff permanently attached to the broadcasting organization. While ensuring intensive, systematic, and progressive activity, such a staff runs the risk of finding itself in blinkers if it breaks contact with teachers, while the latter, left out in the cold, drop behind and lose interest in an activity of whose objectives, media and difficulties they grow increasingly ignorant.

These essential contacts can be made in many ways; through the post, by travelling lecturers, visits, congresses, exchanges of notes, through the radio itself in a special broadcast for teachers, or through pamphlets. In addition, there is the ideal meeting ground of such a Board of Management as has been outlined.

Rule 4: *School broadcasts must be jointly planned by the radio organization and teachers, and used by teachers and their pupils.*

We have already seen how close links can be forged between the organization and teachers through the Board of Management of school broadcasts and by contact between radio specialists and teachers. Given these conditions, broadcasts will automatically be planned and operated by the two elements conjointly, working to the same end and reacting one on the other during the preparation of the broadcast.

It is equally important that broadcasts should engender teacher-class co-operation so as to ensure the necessary introductory information, and get the maximum benefit from broadcasts both during transmission and after by following them up in class. The teacher must select those broadcasts which fit into his syllabus, have the same scholastic goal, and are suited to his pupils. On the last point, he will seek the co-operation of the class and will guide rather than direct their choice. By building up this community of tastes and interests between himself and his pupils, he awakes the good will which spurs a rapidly tiring attention.

Education by radio cannot be imposed; it must be accepted and is the fruit of spontaneous collaboration.

Rule 5: *Listening to broadcasts calls for a considerable effort of attention; accordingly, special instruction in listening technique should be given.*

To awake and maintain the attention a broadcast must conform to a number of requirements: attractive or exciting subject, easy form, clear simple style, maintenance of pace, variety, natural tone, clear diction, intelligent use of the various media of radio expression, limited duration.

Even when all these conditions are fulfilled, attention is precarious; the slightest outside incident causes the thread to be lost and hence failure to understand. It is accordingly important that teachers should regard inattention as the chief scourge of school broadcasts, and devote particular attention to instilling by all means in their power strict listening discipline.

For this purpose the following expedients have proved themselves in practice: classroom 'build-up' for the broadcast to create a 'state of grace'; utilization if possible of a quiet room reserved for listening-in; the furniture and arrangement of the room to be designed to facilitate listening (quiet decoration, loudspeaker at a suitable height and clearly visible, chairs arranged in a semi-circle); a place for the teacher beside the loudspeaker and facing the class, to keep the latter under his eye; if possible, the subject and skeleton of the broadcast to be written on the black-board behind the loudspeaker; avoidance of all interruptions—particularly spoken ones—during the transmission; insistence either during or after the broadcast on a succinct *précis* of the subject.

From the combination of these twin efforts, by the radio

organization at the transmitting end and by the teacher at the receiving end, listening discipline will be born and become a factor in school training in concentration.

Rule 6: Radio must study to direct its broadcasts to specific audiences.

This rule applies with most force to popular education broadcasts, whose great weakness is the heterogeneous nature of their audiences; nevertheless, school broadcasts should also devote some attention to it. Should it happen that mental age is not uniform in a school class, it is not a major inconvenience, as the teacher can suit his teaching to the individuals. This facility is not available to school broadcasts. Broadcasts are designed and produced for a specific educational level; it is thus important that the mental age of the listeners shall be approximately identical, if the broadcast is to be accessible to all with the same amount of effort, and to the same extent. Only thus will wastage be reduced to an acceptable minimum.

Those then are the basic rules of the general methodology of school broadcasts. They must underlie all educational work, they point the safe way past hesitation and error, and give sure promise of a successful outcome.

SPECIAL METHODOLOGY

Given that the first rule of the general methodology has proved fruitful of results, as experience shows, it follows that the basis of the special methodology will be the use of the most 'radio-genic' form adapted to each type of broadcast, having regard, of course, to the particular public to which it is addressed. The types of broadcast most effective for educational purposes are those which best use the radio instrument's potentialities and most closely respect its limitations. When a broadcast suits its audience as regards subject, form and method, the educational yield is proportionate to the radio quality. Accordingly, we shall examine the various modes and idioms in general use by radio with a view to extracting their basic methodology.

We have already seen that radio utilizes speech, music and sound effects to transmit its message. These elements are used singly in talks, concerts or documentary broadcasts and in combination in montages, plays and feature programmes.

Speech

Speech in its pure state is a form of expression perfectly suited to radio.

To achieve success in education the radio must submit to certain conditions and conform to certain norms, lacking which there is a risk of the word falling on deaf ears. One of the most intractable problems affecting spoken transmissions—and also,

indeed, music (to a lesser extent) and sound—is that of maintaining attention.

Let us assume that conditions are as favourable as possible, that the subject is interesting, the form of the broadcast attractive and reception good. Notwithstanding all this, apprehending the spoken word requires an effort which rapidly brings fatigue and, with it, inattention. Listening to speech requires a sustained effort which can rarely be continued for more than a relatively short period.

Much of the attraction of a lecture given before an audience physically present depends on the gestures and expression of the speaker, upon the hall or room itself, and upon the atmosphere that prevails in it. In radio there is nothing of the sort; the spoken word picked up by the microphone reaches the ear unadorned, without the slightest aid external to itself. Hence there is rapid diminution of its power of attraction.

A broadcast which does not awake and—even more important—sustain interest, carries the seed of death within it for very lack of listeners. Herein lies a problem of capital importance, and the whole effort of producers is directed to resolving it. But how? This brings us to the conditions which, if observed, will ensure success.

They can be divided into two groups: firstly, the conditions common to all forms of spoken transmissions, i.e. (1) duration, (2) diction and elocution, (3) naturalness and charm; and secondly, specific conditions, i.e. (a) clarity, simplicity and conciseness for announcements, (b) an interesting subject clearly defined and a speaker of repute for talks, (c) the quality of text and interpretation for literary readings. There are, in addition, certain devices such as alternating voices, dialogue and sound effect background.

1. *Duration.* The attention must not be asked for an effort beyond its normal capabilities. The inference is that the duration of the broadcast must be governed not by the subject dealt with but by the limits of attention. The latter are assessed entirely empirically, as they will continue to be until a full and systematic psycho-technical investigation has been carried out. However, radio practice has evolved a certain scale: apparently, spoken broadcasts (by which is meant speech alone) directed to a child audience can be listened to for five minutes without abnormal effort and on occasion may hold the interest for ten. Below this minimum time it would no longer be possible to deal with the subject in an interesting way; above the upper limit attention would rapidly be lost.

2. *Diction and elocution* are of decisive importance in radio, much more than in public addresses, where gesture and mime fill in gaps. It is exceptional for any talk or reading to be a success over the air if it is badly spoken, however satisfactory its form, and however wide and interesting the content: these elements rapidly lose their holding power if the voice is dis-

figured by an accent or hesitates in delivery. Admittedly, there will be great interest in a talk by an attractive personality of the artistic, political, scientific or literary world; but interest will fade rapidly if diction and elocution are faulty. The faults that can be endured for a moment or two because of the reputation of the subject or of the speaker become intolerable over a longer period. They are a cause of distraction, if not of ridicule.

3. *Naturalness and charm* have a leading rôle in the maintenance of attention and in making the "spoken" broadcast attractive. Even more than diction or elocution, they are the radio lecturer's substitutes for gesture and mime.

To be natural, a man needs talent of a rare and special kind. But he needs extensive practice too. Naturalness on the part of the reader is a *sine qua non* of good broadcasting, for it alone gives the simple, informal, direct and intimate tone which makes the hearer in some sort a sharer in the work and retains his interest. Naturalness alone can create the necessary trust and understanding between the lecturer and his public.

If charm be added to the natural manner, success is assured. Charm depends on a radiogenic voice and on certain indefinable vibrations which, as in music, awake a sympathetic chord in the heart of the listener.

By a proper use of duration, diction, elocution, naturalness and charm, a broadcast avoids the worst consequences of 'listening fatigue'; maintains attention, and can count on good results.

But measures against loss of attention must not stop here; they must be extended to each separate type of spoken broadcast, in the shape of compliance with each one's specific conditions.

(a) *Announcements*, whether of programmes or of news, must be clear, precise and concise.

Here, as in all other spoken forms, there is a broadcasting style. What it consists of — and what distinguishes it from written style — is that it always looks for the word easy to grasp, the term universally known; it avoids all difficult terminology; it uses the ordinary everyday vocabulary, the vulgar tongue. It cultivates a simple form which eschews redundancies and flourishes; its ambition is clean-cut clarity. It is a grammatical version of the common speech.

(b) *Talks* of all kinds, narratives, dissertations, etc., are so difficult and thankless a form of broadcasting that in 1939 an expert conference was needed to discuss them under the auspices of the International Broadcasting Union (IBU). In addition to the general rules for all broadcasts of pure speech, if talks are to awaken interest and maintain attention, they must meet at least three conditions: (i) a precise and limited subject, (ii) interest of subject-matter, and (iii) a well-known speaker.

(i) A precise and limited subject: Just as broadcasting style must avoid redundancy and complexity, so the content must

be carefully defined and rigidly confined to essentials. In listening to broadcasts there is no time for meditation nor possibility of turning back the page; a talk must deal with a definite question whose development must be confined within predetermined limits; things to be avoided are large-scale syntheses requiring an abnormal effort of attention, digressions which cause the thread to be lost, or over-meticulous explanations which make the talk drag and repel the listener. Broadcast talks call for much modesty from their authors, constant sticking to the point and the sacrifice of erudition on the altar of clarity and simplicity.

(ii) The subject must be interesting; by this I mean not interesting in itself, but interesting to the listeners. It must correspond to some query, wish or expectation; it must arouse attention from the moment it is announced. To lecture successfully to schools over the air the tastes and needs of the pupils must be more deeply pondered than in any other form of broadcast. All the psychological factors favouring good listening must unite to combat the fatigue so easily caused by broadcast talks.

(iii) The lecturer must be well-known: His reputation is a valuable addition to the 'accidents' awaking and retaining attention. In many cases a well-known name, to some extent, counterbalances defects of subject, diction, elocution, etc., and in itself is sufficient to awake the attention of the listener. It is one of the decisive factors in good broadcast talks.

(c) *Broadcast readings from literature*, lacking the support of mime, gesture, physical presence and setting, demand perfect comprehension of the text reflected in the voice.

The complete absence of the physical elements, which are of such assistance in creating a receptive atmosphere, requires the broadcaster to make up for their absence by an added effort of understanding and expression. It may be said with truth that readings from literature are a *tour de force* demanding perfect knowledge of the resources of the microphone coupled with an appreciation of the underlying intentions of the author, a profound understanding of the text. Here the slightest shade of tone is of importance, for, despite appearances, the microphone not a faithful interpreter; it takes hold of your words and can turn them to ridicule.

What are wanted are the rare virtues of restraint, self-effacement behind the text, delicate shades of meaning, appropriate intonation and calculated effects; the voice and interpretation alone must put into the reading all the implications which gesture and mime convey so eloquently before an audience. The hearers must be brought to feel, without effort or loud striving, the underlying thought and hidden feelings of the writer. Broadcast literary readings are not proclamations but confidences.

It remains to say a little about *special devices*: alternating voices, dialogue and sound effects, which make attention to broadcast speech easier.

These techniques should not be used when the difficulties can be resolved by compliance with the essential requirements detailed above. The latter, in fact, derive logically from the vehicle itself and respect for them adds to the substance of the text; the former on the other hand add nothing to the spoken text and the only reason for them is the desire for variety or the fear of monotony. They are frequently a danger as distracting attention from the subject to focus it on some external accident; they direct interest from the essential to the accessories.

However, it is a fact that the greater variety of alternating voices, the dramatic element introduced by dialogue, and the relief of sound effects repel fatigue, maintain attention and increase interest. Thus the help they can give us should be sought when the other qualities required are lacking.

These, then, are the general lines of the problems arising in connexion with the spoken word. Their number and complexity demonstrate that speech requires special delicacy of touch and must be the subject of close and constant care. Too much stress cannot be laid on the need for caution in spoken broadcasts.

Music

Up to 70 per cent of radio programmes consist of music, and this figure indicates that it is singularly well adapted for transmission over the air and is one of radio's most effective idioms.

While the spoken word comes up against two types of difficulty, residing respectively in the listeners and in the adaptation and reading of the text over the microphone, music is transmitted without special treatment, as it was written for the concert hall. Here, the whole problem consists in the relations between the listener and the particular musical work, exclusive of any question of adaptation to the radio medium.

The only problem raised by music is sociological, and its premises may be set out in the terms used by Charles Vetterl in the *IBU Bulletin* of October 1936:

1. The problem of music is conditioned by the relation between the music broadcast and the social classes that make up the audience.
2. In place of the crowd psychology of the concert hall, we have the individual psychology of the solitary listener.
3. The twofold apprehension by eye as well as ear, which is the main source of artistic emotion, is impossible for broadcast music.
4. Broadcasting frees the listener from the influence of the crowd and the critics; it compels him to take an individual decision.
5. There can be no doubt that the main motive in listening to broadcast music is the desire for recreation.

6. The initial emotional temperature, and the average listener's concentration are both very low. It is accordingly necessary, if the broadcast is to have educational value, to awaken the attention and retain it throughout the whole programme.
7. Only by improving the quality of 'everyday' music (of which the bulk is light) and by designing performances to stress the art's 'aliveness' and bring it within the reach of the common man, shall we contrive to produce genuine musical feeling and develop good taste. Till then, 'serious' music, whether classical or modern, will remain a broadcasting problem.

The inference is clear; the real difficulties lie in the listening public, its composition, its psychology, its demands and its tastes. The rules set out above, adapted to school broadcasts, constitute the special musical methodology of the branch.

As things are, school broadcasting is faced with a listening public which, though sensitive to music, is too often lacking in musical culture and taste. Here the problem is purely one of musical education according to a clear and methodical plan. In that plan the 'improvised' concert has no place; it must always be introduced and accompanied by a spoken commentary which, in addition to teaching, awakens and maintains attention and brings the art within the reach of the child. Moreover, group listening in class to some extent avoids the deficiencies and limitations of individual listening; the teacher's remarks go some way towards restoring the influence of criticism and in any case facilitate the formation of personal opinions.

The fact that music in school broadcasts is presented as a course in appreciation, and that the instruction is carried on by the teacher in the classroom, largely offsets the weaknesses of broadcast music. If the syllabus of the course is carefully graduated, and the teacher himself is musically educated, broadcast music for school-children gives rise only to the difficulties inherent in education as such; it allows much greater freedom of action than spoken broadcasts. When a coherent and progressive syllabus has been evolved, the producer has no serious obstacles to surmount as with the spoken word. When the teacher is musically enlightened the broadcast easily attains its end. The hub of the matter lies in the syllabus whose preparation calls for the closest conformity to Charles Vetterl's sociological rules, adapted to the schools.

Sound effects

Sound effects are an element regularly used by broadcasting. They are 'actors' in their own right; in certain cases sound effects as such have the same expressive and interpretative force as speech or music; in a broadcast they play at times as important a rôle as either. But as they are a less flexible medium of expression, they must limit their ambitions.

It would be wrong to regard sound effects as no more than

auditory scenery, sound background in technical terms. As such, they are in most cases well-nigh useless and are merely an accessory of no particular importance. They come into their own, however, in cases where the spoken word or music is powerless to express with the same veracity or intensity a particular reality or artistic theme.

Their importance in broadcasting is thus considerable.

While the visual image 'shows' us each object as present, sound can only indicate the object in motion'.¹ This is a fundamental difference, whose practical consequences are far from negligible. There is another as weighty: 'The world of sound is less well-endowed than the world of sight'; the former indeed loses yet more in radio, because that medium must avoid a whole series of sounds, of which, say, the cinema, helped by vision, can make use without fear of confusion.

Let us take as an example motor-cars. The cinema makes it clear that there is a car there, whether stationary or moving, and whether silent or not; save by recourse to speech, the radio can only bring to our minds the picture of a car if the engine is running. The noise of the engine calls up the image or concept: motor-car. But distinctive noises will still be wanted for moving and stationary cars. The inference is that it is impossible to call up the picture of two different movements of the same thing if the sounds of those movements are identical. Furthermore, many things have no characteristic noise and thus are inexpressible by radio; many sounds are difficult to identify; and the same sound may be produced by entirely different objects.

Hence, it will in very many cases be necessary for the spoken word to supply the details which the sound effect by itself cannot give. This limits the scope of sound and makes it possible to lay down a general rule.

Sound is fully justified 'wherever it is unmistakable, or has a symbolic significance or intrinsic meaning' which listeners can grasp without effort or confusion. On this footing, noise is an element like the others, co-operates in creating atmosphere and is an instructional expedient.

On occasions, however, it serves only to illustrate the text, like illustrations in books. Here, the greatest care is essential to avoid wrong use and confusion. It will be wiser, before using a sound background, to ask oneself: 'does this particular effect assist in creating or maintaining an emotion or in evoking an idea? If it were eliminated, would the text lose any of its evocative power?'

In addition to realistic sound effects, radio is making increasing use of stylized sound effects, which are defined as 'sounds made up of realistic elements but conforming to a predetermined rhythm'.¹ Thus these effects lie midway between realistic sound

1. W. Haussman.

effects and music, and may attain great emotional intensity. However, they require in their creator a talent very near to that for music, and relatively rare.

The art of broadcasting

We have already seen that the art of broadcasting as such lies in the balanced combination of the elements of speech, music and sound. Radio has further created its own forms of expression, namely, 1. montage, 2. the radio play and 3. the feature programme.

1. *Radio montage* is the simplest form of broadcasting art. It consists in a sound impression of the 'high lights' of any occurrence.

The incident is 'pruned', to leave only its significant or suggestive elements, and these are then 'mounted', linked together by a suitable commentary and, in certain cases, illustrated by appropriate music or sound. The pruning stage requires tact and perception, and that of montage skill, with knowledge of the capabilities of broadcasting; the commentary demands a talent for writing, and the illustration a sense of proportion and taste.

Originally the montage was principally the artistic medium of *post facto* reportage. At that stage of development it dealt with physical happenings, and in particular topical events. Today, it has extended its range and has no difficulty in handling literary, artistic, musical, scientific, technical, and other subjects with little naturally radiogenic content.

It thus has its place in school broadcasting.

2. *The radio play* may be defined as the representation of incidents by the use of plot and dialogue.

Radio dramatic art is the offspring of the conventional drama. The principal rules of the radio play were evolved in the course of adapting stage techniques to the studio; its internal mechanisms and limitations are essentially those of the visual drama. But its possibilities are far greater, as the author is freed from the limitations of the stage.

The stage, with its rudimentary machinery and confined space, sets strict limits of time and place for the dramatist. The material reality of the actor's physical presence imposes on the play a certain degree of realism and prevents a smooth transition into poetry, mystery or the intangible.

Radio knows nothing of these limitations. With free recourse to music, the spoken word and sound, which it blends into a harmonious synthesis, the radio play achieves a new aesthetic. Unclogged by matter, it can express an infinite variety of subtle feelings; through the spoken word, which here recovers all its expressive power, it has the faculty of 'attaining and suggesting with as much clarity as delicacy the loftiest abstractions and

all the finest shades of thought and feeling'; yet it does not recoil from realism, but conveys it with the fullest intensity.

Or course, like other arts, it is subject to certain constraints and has its own limitations. Its greatest weakness is the lack of visual impressions. All the visual action, the settings, the characters, and the several situations must be transposed into auditory impressions. Now the world of hearing is more limited than the world of sight. However, this frontier is pushed far forward, when the author avoids the search for exact acoustic equivalents of the visual. Liberal use of acoustic symbolism can free the radio play from its subservience to things seen and—to a considerable extent—to literature. The author will think in terms of sound without having to pass through the stage of visualization just as the film director automatically thinks in terms of sight.

A further essential characteristic of the radio play is rhythm, alike in the broadcast as a whole and in the interpretation of each rôle. It must be sustained, rapid, alert and intense. The author must maintain it in his text by excising everything redundant, by condensing his scenes and by keeping the action moving; the producer must 'put it across' by means of a clean, swift, interpretation without 'purple passages' or smudged outlines.

The fact is that, as in all other types of broadcast, the attention of listeners is capricious and tires swiftly. Thus script, production and acting must conform to the special 'broadcast' rhythm.

For the same reason the radio play must be shorter than a play in the theatre. In practice it can rarely exceed forty-five minutes, without requiring a fatiguing effort of attention; in educational broadcasts this length is definitely the maximum; we must keep below it, save in quite exceptional cases.

Lastly, to stick to the essential features only—through skilful use of more than one microphone the radio play can modify the perspective of direct audition, balance the sound masses and—like the cinema and for the same purpose—use 'close-ups'. In broadcasting, every listener is at once conductor and producer. By that I mean that his senses receive exactly the same impressions as those of the conductor or producer. The microphone reckons nothing of space and distance and, when needed, seizes an echo, a note, an aside, a murmur, a sound effect, and fits them in to their right place in the whole. With a well-placed microphone faded in or out at will, nothing is simpler than to underline a musical motif, or spot-light a piece of dialogue. Thus radio can, as the canons of art dictate, modify the sound perspective or use close-ups at will.

This brief outline of the characteristics of the radio play demonstrates, I think, all that school broadcasting could get from it for the representation of any subject lending itself to dialogue and a plot. There are, of course, limitations, which

place many instructional subjects out of bounds for the radio play. But school broadcasting gets over this difficulty through the feature programme.

3. *The feature programme* ('Hörfolge' in German and 'Suite radiophonique' in French) is a new art form distinct from the play-writing technique inherited from the theatre. Feature programmes owe nothing to the stage, but much to the radio play, in so far as the latter is a special technique and a new medium of expression.

Dr. K. E. Fischer has defined a feature programme as follows: 'A selected subject (a town, a poetical motif, an incident or a person) is presented according to the fictional technique in any of a wide variety of styles: extracts from chronicles, historical works, autobiographical memories, letters, speeches, articles, quotations from poems, songs, well-known passages of music, radio reportage and short dramatic interludes.'

It consists in utilizing all available information and all the resources of radio technique to 'throw light on a subject from as many angles as possible, i.e. in some sort to achieve the same results as a scientific analysis in as interesting a way as possible'.

This definition of the Feature programme requires amplification, as it omits a very important side, namely, the artistic. In fact, the sum of the constituent elements must have internal unity; each element follows logically from that which precedes it and is selected in terms of the central theme and its artistic expression: 'the whole canvas and the individual portraits in it are organically connected so that the whole shall be seen to be a lyric, epic and dramatic work' with no extraneous or unmotivated elements; all together, dialogue, recitative, music, sound, serve the end which has been set'.¹

The range of the feature programme is enormous (thus it is of interest to school broadcasting), much greater than that of any other type of broadcasting. It extends from 'mosaics', defined as "mixed poetical and musical forms illustrating a motif or an atmosphere", to the accounts of outstanding events, impressions of towns or persons, commemorations, tributes to men and things, travel and exploration, trades and professions, etc.

Briefly, it can include all subjects where artistic composition is possible. It is much freer than the radio play—which indeed, it utilizes—because it is not confined within narrow limits of dialogue and plot. Not only does it call on all the resources of broadcasting; it can appropriate all aesthetic modes, poetry, music, tales, theatre, etc. and all forms of expression—essays, talks, reportages, etc., but with the difference that it combines, arranges and presents them in such a way that the whole awakes the desired emotion and creates the work of art.

1. H. Werner.

This is, *par excellence*, the type of broadcast that meets the most general and enduring needs of school broadcasting. I will go so far as to say that every broadcast to schools with its talks, reportages, dialogues, plays and montages should be designed and produced like a feature programme; it would thus find an element of unity and attraction which, waking and maintaining attention, would give it the rare guarantee of effectiveness.

The importance of the feature programme in education by radio justifies us in discussing it further. Let us work out a concrete example of the theory outlined: impressions of a town.

The author of a feature programme will first collect documentary information of every kind: historical, travel, folk-lore, local history and relevant literary texts.

He will amplify his written information with matter drawn from living sources, reportages of typical quarters of the town, the streets, the markets, the fairs; he will take us to the places where men work, where they withdraw in contemplation, where they spend their leisure; he will record the street cries peculiar to certain towns and the solemn cadence of church bells.

He will accumulate a library of records of popular songs and musical compositions expressive of the city's inner soul.

There will be a place, too, for extracts from plays whose characters are typical of the place or which evoke significant aspects of the city. In a word, he will collect a full, varied and selected body of data which will be the raw material of the broadcast.

Then will come the real task of artistic creation. What must be done is to fit the material into place, and it must then be expressed through the radio medium.

The feature programme can justly claim a leading place alike in art and education. But like radio as a whole, it evokes sentiments rather than ideas, what it leaves behind is an impress on our feelings rather than our intellect. Briefly, it builds up a sketch rather than a portrait.

These then are the main outlines of the special methodology of school broadcasting, utilizing the several forms of expression of broadcasting for educational ends after adapting them to its needs. In planning the broadcast, whose subject, standard and place have already been fixed, the school broadcast specialist finds himself at grips with a twofold difficulty; that of translating school subjects into the radio idiom and shaping them into a broadcast; and that of adapting the broadcast to the school public. Of the two difficulties—giving a broadcast which takes into account the possibility and limitations of radio, and giving a lesson which takes into account the psychology of the children—the first would seem to be the more serious. In fact its conquest calls for a thorough knowledge of

the art of broadcasting, whereas the solution to the second is found in an instinctive sympathy with the child rather than in abstract pedagogical knowledge. It is for this reason that so close a scrutiny has been given to the forms of broadcasting expression through which the educational material is communicated to the children; their norms are the basic norms of the special methodology of school broadcasting. The rest is mainly a matter of sympathy and practice. However, there is one more important question for our attention on the strictly educational side of school broadcasting—that of the subjects to be taught.

Subjects to be taught

The subjects included in the programmes for school broadcasting are very varied; perhaps too varied when we compare the respective programmes of several countries. Admittedly, there are certain subjects found in all; for instance, the introduction to music, and readings from literature.

Of course, on comparing the respective school syllabuses of several countries, a certain diversity is also apparent; generally speaking, however, this is confined to a few supplementary subjects; the basic subjects appear everywhere. How is it then that school broadcasting syllabuses differ so widely? It would appear that the selection of subjects is governed by caprice or the force of habit. Certainly there was originally some justification for the rather haphazard exploration of every avenue; it made it possible to accumulate a large body of instructive experience, to carry out fruitful experiments without restraint, and to determine empirically what is viable and what is not. Indeed, the abundance of subjects so generously offered by the radio was surely one reason for its success, by its response to all the needs of teachers and to all the interests of pupils. Out of the whole bulk of items of such widely varied value, there were always one or several broadcasts which met a desire of those to whom they were directed. Thus, though with considerable wastage, school broadcasting asserted and established its right to be deemed a subsidiary medium of education.

RULES FOR SELECTION

So much experience of school broadcasting has now been acquired that it should be possible to establish the rules to govern the selection of subjects and the working out of the content of programmes.

It is necessary that the rules for selection should be based on enduring realities, namely, the possibilities and limitations of radio considered as a medium for the expression of thought and feeling, the possibilities and limitations of the several types

of broadcasts, and the necessary independence and nature of education as such. These realities were fully taken into account in drawing up the rules for the methodology of school radio; they are of equal weight in the selection of subject matter.

To be valid therefore, the rules guiding the selection of subjects must take full account of these factors.

Rule 1. *Any subject whose assimilation calls for meticulous, precise and methodical teaching will be excluded.* As we have seen, broadcasting is better fitted for evocation and suggestion than for systematic training. When it aspires to handle subjects whose natures demand close reasoning, it becomes heavy, monotonous and clumsy. In fact it would be true to say that radio is the medium for training the spirit of sensibility and not the geometrical mind.

Rule 2. *Any subject whose assimilation calls for thought and reflection during the broadcast should be excluded from school broadcasts.* If the subject taught requires explanation or individual reflection during the lesson, it runs a serious risk of not being understood by the listeners, who will be confused by the swiftness and continuity of the flow of words.

Rule 3. *All subjects for teaching by radio, like all other school subjects, must be justified in terms of the educational objective sought by the several degrees of education.* These objectives were established in the light of psychological possibilities and of the requirements of life in society. They are the product of long experience, of research in school psychology, and of a rational attempt to adapt the school to society. It is not for school broadcasting to call them in question; its own limited competence should rather lead it to regard them as fixed premises of the problem. It would be undesirable for school broadcasting, by bringing into the school subjects irrelevant to the educational objectives of each degree of education, to hamper the striving of the teacher towards the goal set for him from above for reasons sound in theory and practice.

Rule 4. *Those subjects will preferably be selected which suffer least from being taught in a depersonalized and collective manner.* Those subjects which, to be taught effectively, require the support of a strong personality—e.g. courses on ethics—should be kept out of school broadcast programmes save where there are special reasons justifying their inclusion—a case in point would be the sudden introduction of a new subject into the school. So far as possible also, those subjects should be avoided where difficulties of assimilation or the complexity of the explanation call for an individual approach under the supervision, and with the individual advice, of the teacher, treating each pupil according to the requirements of the latter's personality.

Rule 5. *So far as possible those subjects will be selected which give the most occasion for action within the school.* As

radio is directed solely to the sense of hearing, there is a risk of its introducing into the class a measure of passivity and restoring teaching 'at the feet of the master'. To avoid this peril, broadcasts must be offered wherein the subject itself or the approach adopted calls for immediate or subsequent enquiry by the individual in reference to sources. Even if school broadcasts secure the full co-operation of teachers who will ensure that full use is made of the radio subject, they will only attain their full effect in so far as they give rise spontaneously either to requests for further explanation or a wish to do something.

Rule 6. *Subjects which do not naturally lend themselves to interpretation in the radio idiom should be excluded from school broadcasts.* It would surely be ridiculous to attempt to teach subjects which from first to last demand examination of actual specimens, e.g. the plastic arts. Radio's realm is the world of hearing and it should hold back from the world of sight, which is the preserve of educational films.

Rule 7. *Radio will teach only what the teacher himself cannot handle, either for lack of the requisite knowledge or ability, or of the necessary teaching equipment.* There are weighty psychological arguments against its seeming, in however small a degree, to compete with the teacher. Where the teacher is suitably equipped for a particular task, radio is not justified in interfering, as teaching in class is fuller and more effective than teaching by radio. Radio must be confined to providing either the subjects beyond the competence or power of the teacher, or the teaching material which he does not possess, or illustrations of certain courses which he is giving.

Respect for the objectives of school education will demand care in avoiding the introduction by the radio of extraneous subjects having no logical place or rôle in the general scheme of education and whose mere presence could hamper the orderly working out of the process. The subjects taught by radio must be extensions of the school programme only.

There is a vast number of subjects which with the best will in the world the teacher cannot offer his pupils: e.g. concerts and plays; there are other subjects beyond his reach for lack of the necessary data, particularly in small towns and villages; there are desirable lessons which cannot be given for lack of material; there are also moments when some degree of relaxation from organized work is desirable; there is the whole world of current affairs. Thus many difficulties limit the instruction which can be given within the class and to which the radio can and should provide a solution.

THE FIELD OF SCHOOL BROADCASTS

The whole field of music is fully and freely open to radio. This is an inexhaustible vein of useful broadcasts, which school

broadcasting can work without fear either of harmful interference with the school syllabus, or of the weaknesses from imperfect radio expression or of the introduction of a particular bias. With radio, the serious difficulties which the school encounters in attempting to give musical education are easily surmounted. The radio can offer musical performances under perfect conditions, with the best performers and the best conductors. Thus music comes to the school under optimum conditions.

There is no limit to what can be done save that springing normally from the requirements of educational progress. Radio can teach community singing, demonstrate the various instruments to the pupils and inform them about composers, performers and conductors; demonstrate the various forms of composition; explain the history of music, with the help of suitable sound illustrations. Were this the only justification for school broadcasting, it would be enough. But there are others.

The sphere of the spoken word is freely open to radio.

Of forbidden subjects there are of course none. As we have seen, however, lectures, talks and even discussions over the air have one major disadvantage: attention tires quickly. These difficulties may to some extent be palliated by certain factors such as the appeal of the subject or the reputation of the speaker. These compensations are, however, too much the exception. Any subject which can only be translated into the radio idiom as some type of lecture, should, generally speaking, be kept out of school broadcast programmes.

In literary readings, however, the radio recovers a large measure of freedom. As in music, the whole world of literary culture is open to it. It 'breathes life into dead print by the art of the spoken word and makes it live to a degree incomparably greater and more effective than could be done by the book, which up to our day was so powerful a factor in education'.¹ What comparison is there between the worth of a piece of literature read and interpreted in the classroom and the same text read and interpreted by a great actor? Could any teacher fail to welcome the opportunity of using at will illustrations as apt as those which radio affords him for his literature lessons? For school broadcasting, this is an activity as important as the introduction to music; it is a glorious opportunity for reviving the masterpieces locked up in books.

Turning to sound, this can play a greater part than at present in the training of the sense of hearing.

Admittedly, its sphere is limited and its power of expression not more than moderate. The tale of its educational content is quickly told: the cries of animals, catalogues of voices, the noises of machines and the sounds of nature. However, there

1. J. Heller.

are perhaps grounds for regretting that more attention should not have been paid to what is one characteristic of many things and creatures. Possibly our habit of regarding sound as a background or illustration may cause us to lose sight of the fact that it has an existence and a meaning of its own. It deserves to be known and studied, alike to allow of its identification, and to train the ear.

The scope of broadcasting is, however, tremendously increased through the several art forms of broadcasting. Thanks to the radio play technique, any subject can find a place in the programmes provided it has the dramatic elements of dialogue and plot; radio montage makes it possible to teach any subject expressible in sound effects; the feature programme opens the way for any subject where suitable spoken, musical or sound material is available.

Broadcasting art forms are an invaluable resource for school broadcasting; they enable radio to embark on subjects which in themselves are unsuited to it. To take an instance, an historical lecture is intolerable over the air, whereas the evocative power of an historical radio play is considerable. A mere account of exploration swiftly becomes indigestible, whereas the feature treatment restores its full quality; a spoken reportage of all the details of a particular event risks becoming tedious, whereas skilful radio montage throws it into relief. Indirectly, therefore, through these art forms utilizing radio's means of expression, school broadcasting programmes can include many subjects which in the pure spoken form must be rejected. The problem then, may be stated as follows: can a particular subject, having regard to its content, be easily treated in terms of one of the radio art forms? If the answer is yes, there can be no objection to its inclusion in the programme, always provided it meets a need. If the answer is no, then however interesting it may be in itself, it must be rejected.

Before leaving the question of subjects suitable for teaching by radio, I should like to spend a minute or two on current affairs. Questioned as to his views on the greatest change in teaching brought about by the war, Peter F. Wiener, Head of the Current Affairs Department of Stowe College in Great Britain, at once replied: 'The introduction of current affairs as a regular subject in the school syllabuses.'

Broadcasting has no rival in the field of pure news (daily news) and in handling topical questions. I can best illustrate this by quoting an article by J. Heller in the *IBU Bulletin* of August 1947; as head of the Czech School Broadcast service Heller speaks with authority:

'The living character of all instructive programmes and their bearing on the life of today is the cardinal need of radio for the young and it was for this reason that school broadcasting organizations after the war did not hesitate to include a regular

news service for children in their programmes and regular items by which they could become interested in what was happening around them and in the world in general.

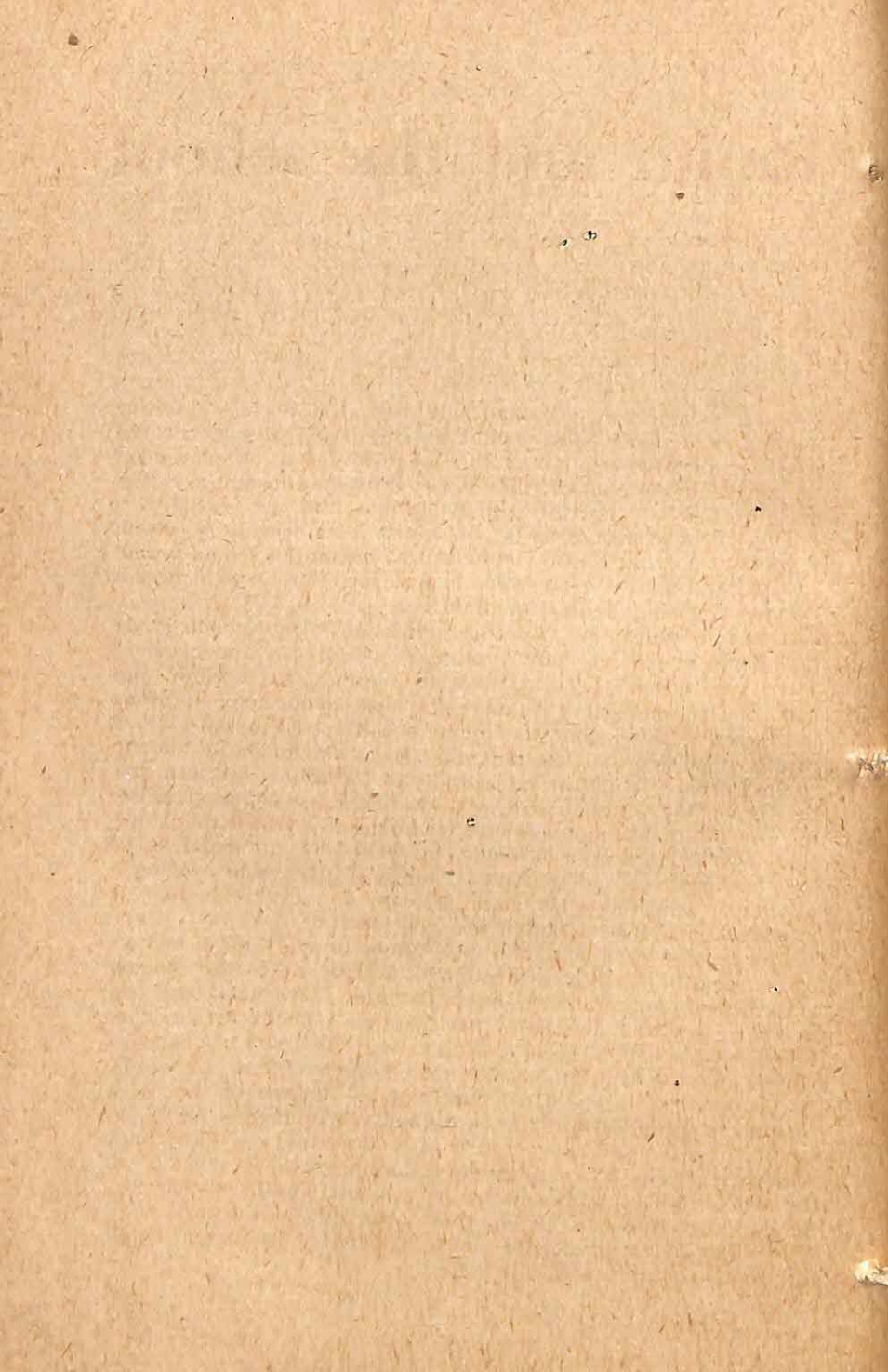
'The school of today is no longer surrounded by that high wall which used to separate it from the rest of the world. If it is not able to take its pupil across the world to feel the pulse of life everywhere, there is the radio ready and able to do so. By making itself the echo of the world outside, radio constitutes a strong link in the chain which binds everyone together, working for each and all. In this sense the real task of the radio has only made a beginning but there is no doubt that in every country it will find possibilities of expanding and making itself valued. The way in which each country achieves this does not matter but radio will become an indispensable part of civic education in its most vivid form and in schools of all kinds.'

We are not now called to pass judgment on the desirability of introducing the two forms of current affairs (daily news and topical questions) into school programmes. However, if the educational world deems it desirable, the radio will necessarily be the medium for this new subject. The teacher in his class is not equipped to handle it; he has neither the technical means, nor the necessary co-operation. The radio can provide news broadcasts specially for schools and use the greatest experts to give the teacher the necessary material for any lesson or discussion on current affairs.

For this subject the radio is an idea vehicle, being both practical and economical. Through its ordinary news services it has available all the necessary material and can secure the services of experts to meet all the requirements of the educational world. Current affairs afford it an extensive sphere of action, where its special quality and educational effectiveness can be outstandingly demonstrated.

To conclude our consideration of the subjects of which radio can be the vehicle, we may venture to lay down certain general rules.

Having regard to the requirements of education, all those subjects that depend, for their assimilation, on exclusively visual documents must be excluded from school broadcasts; those subjects can be included whose assimilation is dependent on documents wholly or mainly auditory; a subject may be included, whatever its field, if it affords adequate scope for the use of broadcast art forms; teaching by the radio must at all times conform strictly to the laws of radio expression and school listening; radio is the ideal vehicle for current affairs.



Radio and the school

Even if school broadcasting had evolved a perfect teaching method, its effectiveness would be nil in the absence of full co-operation between it and the schools. Merely offering good broadcasts is not enough; they must be listened to willingly and must be put to proper use in the school.

This problem cannot so far be said to have been fully solved. It remains acute in those countries just beginning school broadcasting, and at this early stage is a serious handicap to broadcasting as an educational medium.

How is broadcasting to secure admission to the schools when this depends entirely on a voluntary gesture by the teacher? How, after securing entry, is it to maintain its foothold and make itself a necessity? How are the most favourable conditions to be secured for proper use of the broadcasts? For satisfactory results it is essential not only that there should be systematic co-operation between broadcasting and the school but also that the teacher be supplied with a guide to the use of broadcasting for education. Without this co-operation and without this guide school broadcasting is brought up short by the barriers of incomprehension and unskilled handling. It tends to become a diversion accepted with some disdain for the relaxation it affords in a tiring and often irksome task.

It is thus of great practical importance to study the problems of co-operation and of utilization of broadcasts in the schools and to seek for solutions. Even the most superficial analysis demonstrates that, in attempting to make contact with educational circles, school broadcasting meets a diversity of obstacles which must be well known the better to be overcome. Generally speaking, there is an initial tendency as the part of the radio specialists to underestimate the difficulty, which trusting in the quality of broadcasts prepared with meticulous care, they think will solve itself. When progress is halting they are amazed at the lack of understanding shown by teachers, pupils and parents. By concentrating entirely on their own side of the task, they devote too little attention to their partners, the teachers, though the last word lies with the latter.

The obstacles

The school has its own organization, staff, psychology, requirements and inhibitions; it is, as it were, a fully-developed entity with its laws, traditions, habits and even prejudices. Dedicated to a difficult task demanding method and precision, it tends to withdraw into itself, to build walls against interference from without; it reacts instinctively against any intrusion liable to disturb its work.

Impatient and eager like all beginners, radio seeks to force doors shut against the noises of the outer world and to cast down the fences set up against intruders.

Judging from experience, ten years are needed for school broadcasting to make any serious impression on educational circles; but only five years, between 1922 and 1927, were needed for radio to encircle the globe. Something is out of balance; and the cause is faulty appreciation of all the obstacles that beset the path of school broadcasting, whose roots lie in psychology, in the syllabuses of the schools, in their equipment or lack of it or in the teacher's ignorance of the new technique.

THE PSYCHOLOGICAL OBSTACLE

The psychological obstacle which is the hardest to overcome consists in the teacher's reluctance to adopt a new technique.

The school is an institution set in its own regulations, methods and subjects, which in their day answered the need for the 'methodical conditioning of the younger generation to the needs of Society'.¹ Like all institutions, a degree of conventionality has grown up, springing from habits of thought and action, and engraving those habits in the character of its servants. The latter quickly come to live by tradition, admittedly a worthy tradition, based on sound practice, but which threatens educational methods with fossilization in outmoded forms when it becomes a barrier to change. Every time a new subject, method, or technique, seeks to force an entry into the world of education, the instinctive reaction of teachers, without proper scrutiny or reasoned decision, is to bar the way.

The opposition of the educational world is specially justified in the case of radio. At first sight radio seems a mysterious instrument; broadcasts come out of the unknown and claim the allegiance of the teacher without his having the slightest control over them. With all the other educational media offered to him, the cinema for instance, he has the whip hand and uses them as he sees fit, so far as he sees fit and when he sees fit; he can couple the force of his own personality to their intrinsic worth; he can also adapt them to the individual as required. Radio, however, is neither so modest nor so malleable; the teacher

1. Durkheim.

cannot control its impact on the class; he must accept it as it is, and leave it the floor as long as it wishes. He feels himself reduced to the status of a learner along with his own pupils; the more so as radio is not bashful about offering the object-lesson of its own perfect diction, studied delivery, many-sided erudition and impeccable format.

Moreover, from the teachers' point of view, broadcasts are a violent break in a teaching sequence, carefully evolved by the teacher according to the general level of his pupils, the psychological 'geography' of the class, the object sought, the means available and considerations of time and place. Such an invasion of a graduated and coherent syllabus must inevitably create some upset as regards time-table, subjects and methods. The teachers' syllabus must be interrupted to listen to a talk with little relation either to what preceded, or to what follows: methods must be accepted quite unlike those of normal teaching. And after the broadcast all the parts must be fitted into place, so that education may retain its essential characteristics of coherence and sequence; the broadcast subject must be fitted into the syllabus as a whole, related to a particular item, pressed into service for a particular purpose. All this requires a great expenditure of intelligence and imagination.

Moreover, it should be remembered that the broadcast's approximation to the entertainment form and its suggestive and evocative character cause a certain amount of mental confusion. Before it can be realized that these qualities are purely incidental and facilitate the putting-over of a subject which is in fact educational, there must be time for reflexion and analysis and, in addition, some experience of school broadcasting. What immediately strikes the ear is the light amusing style of the broadcast; that is what arouses the attention of the pupils, who are only too glad of the distraction. But the teacher, who wants his teaching to be effective, is less easily persuaded, and initially his mind is beset by serious doubts.

The collision between the novelty and originality of school broadcasts and the caution of the teacher gives rise to that psychological obstacle which so seriously retards the acceptance of radio in the school.

THE OBSTACLE OF THE SYLLABUS

The school syllabus is a coherent whole; it is graduated and systematic and provides for the whole year a carefully worked out time-table.

Whether it be imposed from above by the national authorities, or evolved by the teacher himself, it necessarily expresses, in either case, educational imperatives deriving from the end to be attained within a predetermined period. Whether rigid or flexible it can find little room for eccentricities and improvisation.

Furthermore, the total of subjects to be taught, at all levels of education, is today so large that time-tables are often overcrowded; the teacher has hardly a minute to lose if he wants to complete the syllabus; he must make every possible economy in time and method, rationalize and standardize his work, arrange and develop it in such a way that the whole, study and relaxation, work and leisure, is directed consciously and conscientiously to the some goal.

Lastly, the syllabus does not develop along identical lines in every school; the same subjects are not taught at the same time, and there is always a certain amount of "staggering". While the syllabus may be rigid up to a point, it nevertheless undergoes the adjustments deemed necessary by the teacher in the light of the psycho-pedagogical state of the class.

That is the obstacle which school broadcasting must overcome; it must find the right place for itself in a structure planned and evolved apart from it, and taking no account of it. Despite all the precautions, radio is almost always off the beat; it is available when it is not wanted and is silent when needed. The more rigid and crowded the school syllabus, the less the chances for school broadcasting to fit in, as is clearly seen from the difficulty experienced in securing acceptance for it in secondary and university education, where crammed syllabuses and the multiplicity of subjects leave it little place.

THE OBSTACLE OF EQUIPMENT

This is a problem constantly in the minds of those responsible for school broadcasting. What is the good of all their endeavour to send out the best programmes at the most suitable time, and under the best conditions, if the schools have no receiving sets? School broadcasting is dependent for success on the densest possible distribution of receiving-sets in schools.

THE OBSTACLE OF UNSKILLED USE

Even with all the obstacles rooted in psychology, syllabuses and equipment overcome—even with broadcasts perfect in form, content and goal, and exactly meeting real needs—the problem as a whole will still not have reached a satisfactory solution. The problem that may well confront school broadcasting is lack of skill on the part of the teacher who has the important task of utilizing the broadcast in the school.

There are three requisites for this task: thorough knowledge of the matter taught, favourable listening conditions, and the means to follow up the broadcast.

It would be a dangerous error to suppose that the teacher does not need a thorough knowledge of the subject taught, on

the grounds that radio has it instead. The teacher must not seat himself as a pupil at the feet of school broadcasting. If he wishes to derive profit for his class from a broadcast, he himself must know the subject and content, and himself have secured full information on his own account. Given this, he will not be putting his own prestige and authority in peril, and can fit the broadcast into his own teaching.

But it is not enough for the teacher to have taken the trouble to inform himself thoroughly about the subject; he must also know how to secure most favourable listening conditions. The broadcast must not burst on the class in the middle of its ordinary avocations, without preparation and without mental re-alignment. Pupils must have been brought into the optimum physical and psychological condition before the broadcast begins.

The need for favourable listening conditions calls for preparatory work and "build-up" on the part of the teacher, which cannot be improvised on the spur of the moment. If the school has no room reserved for school broadcasts, class must take up "listening positions": seats as near as possible to loudspeaker, arranged in a semicircle, etc.; next the teacher must build up interest in the broadcast by announcing its subject, recapitulating what has gone before and encouraging questions and requests for information.

When the broadcast is over, then comes the moment to put it to use. Here, too, special skill is required. The first essential is a high degree of mental elasticity and the gift of speedy adaptability. The line the broadcast will take, the media it will use and its general structure cannot be foreseen by the teacher, but he must, nevertheless, instantly grasp both its strong and weak points and drive it home aptly and without hesitation alike to those with questions to ask and to those with none.

A further requirement is some knowledge by the teacher of the radio idiom, to keep him on his bearings and enable him to counteract the weaknesses of educational broadcasts and remedy their shortcomings. Further, adequate documentation must be assembled, preferably iconographic, to reinforce the broadcast with the visual image. The final requirement is thorough knowledge of the subject taught.

To conclude, the possible inadequacy of the teacher with regard either to the subject of the broadcast, to its utilization in the school, or to securing favourable listening conditions, constitutes as much of a threat to school broadcasting as the obstacles rooted in psychology, the syllabus and defects of equipment. Those responsible for school broadcasting must direct all their strivings, use all means to overcome their obstacles to avoid losing the benefit of an enterprise which, given a favourable reception and good conditions, will yield a rich harvest. At all costs non-essentials must be prevented from putting essentials in peril.

The remedies

It is thus clear that great importance should be attached to the investigation of how to overcome the difficulties that hamper broadcasting. No such expedient, however insignificant, should be neglected if it assists broadcasts in achieving their end, namely, reaching the public to which they are directed under the best conditions.

For the sake of clarity I shall divide these expedients under two heads: those designed to build up a spirit of trust and co-operation between radio and the school, and those equipping the teacher to make adequate use of the broadcast.

TRUST AND CO-OPERATION

Co-operation between the radio and the schools can be achieved by propaganda over the air, direct or indirect contacts with teachers, and the publication of programme pamphlets. *Broadcast propaganda* for school broadcasting should be addressed as much to parents as to teachers. While it may seem at first sight that the teacher is the person to be convinced of the soundness of school broadcasting, parents too, have something to say in the matter, and their views are often of decisive importance. If their attitude to school broadcasting is one of indifference or contempt, if they classify it as just another diversion or means of wasting time, their attitude will affect the children and indirectly the teachers themselves, as the latter, sensing hostility, whether latent or overt, will hesitate to make the considerable effort required by school broadcasts, or alternatively will find in that hostility an argument in favour of doing nothing. The experience of the pioneers of school broadcasting demonstrates that very often parents' lack of sympathy is a heavy handicap.

The second point is that propaganda must form part of the general, and not merely of the school broadcast programme. Confined to the school programme, it is a waste of effort; it is preaching to the converted. But as a part of the general programme, it reaches not only teachers, but parents, and even children, as well. Put over in leisure hours, it can reach the people on whose opinion school broadcasting mostly depends, and by going to the root of the difficulty it has the best prospects of solving it. In fact it is far more a matter of creating a current of opinion in favour of school broadcasting than of convincing a particular individual. It is the former which induces the hesitant to take the plunge, and strengthens the converted.

The propaganda must challenge objections, explain weaknesses and champion the use of radio for education. It should therefore concentrate on precise knowledge of the objectives of school broadcasting, on explaining the make-up of its programme and its resources, on demonstrating that the goals of

radio and the school are identical, and on convincing the public of the purity of radio's intentions in education. It must accordingly focus its energies on certain major theses.

Contacts, whether direct or indirect, can be made in a hundred ways. They are of the utmost importance. As things are, radio and the school are too often in separate worlds, ignorant of, and therefore misunderstanding each other. Whenever radio expert and teacher can be brought together, it quickly becomes apparent that mutual understanding is possible, because both are inspired by the same motives. What propaganda, explanatory pamphlets or dissertations over the microphone could not achieve is secured in a matter of minutes by physical contact, whether direct or indirect.

Of the numerous forms which contact between Radio and the schools can take, I propose for the time being to deal only with listener's letters, lectures, visits and co-operation by the schools in broadcasts. Regarding listener's correspondence, it is enough to say that it must be the subject of vigilant care. A letter from a broadcasting organization to a member of the public, in reply to a criticism, a suggestion or a request for information will be read by more than one person. The extent to which its contents are thus disseminated makes it a not inconsiderable factor in propaganda; its subject-matter, which is almost always some matter of precise detail, makes it a satisfactory complement to propaganda over the air, which by its very nature is mainly concerned with generalization.

Lectures to educational circles organized by the broadcasting authorities not only make possible the direct contact so favourable to the airing of the problems of school broadcasting, but also, when followed by free debate, afford an opportunity for disposing of prejudices, misunderstandings, hesitation or disdain. Under this procedure questions can really be thrashed out and confidence built up between radio personnel and teachers; the parties arrive at a better understanding of their mutual needs, their interests, their tastes and their inhibitions; they learn to speak the same language.

Invitations to teachers to visit the studios of the transmitting station also help to establish trust and co-operation. In the first place such visits are an opportunity of showing in its natural setting the kind of work done by the radio personnel and of giving visitors the explanations and practical demonstrations they require.

And in view of the happy results of this policy, the radio expert in his turn will accept invitations to visit schools (a regular practice in Great Britain) as an indication of his interest in the work of teaching, and to show that he has thought to spare for his colleagues and much to learn from them. Experience has shown me that this type of reciprocity is exceptionally well received.

Co-operation by the schools in broadcasts inevitably raises

certain questions of principle. A clear distinction must be made between the two types of such co-operation: what I propose to christen the "educational type", and propaganda. It happens on occasion that, as a part of the programme of school broadcasting, one or more schools are asked to stage a broadcast, or part of a broadcast, whose subject, duration and place are set for them. The contribution of the schools is strictly confined to the giving of a broadcast on a particular subject, within predetermined limits, and so arranged that the educational sequence of the general programme is neither interrupted nor disputed. That is an example of educational co-operation.

It may, however, also happen, particularly at the stage where school broadcasting is seeking to gain a foothold, that schools are asked to stage a broadcast on their own lines, and, to some extent, competitively. Here the coherence and sequence of the syllabus are largely sacrificed for publicity purposes, and to interest educational circles in school broadcasts. This is an example of co-operation for propaganda purposes, when the educational value, at least as far as school broadcasts are concerned, remains open to question.

This is because the preparation and making of the broadcast are "educational" for only one school at a time; the others play a passive part and their interest in the broadcast springs only from curiosity and the spirit of competition. Further, the disturbance of the coherence and sequence of the syllabus enfeebles its educational impact and distracts attention to incidental elements whose educational significance is small. It is self-evident that the publicity potentialities of this procedure are enormous and that such broadcasts awake a vast amount of interest in school broadcasts, mainly because of the competitive factor necessarily involved. On one side is the school preparing and making the broadcast; on the other, the schools listening in, to assess, judge and criticize the performance. The glory shed by having broadcast also enters into the question. In this way, interest is built up which assists school broadcasting, despite the fact that it is concerned only with the attractive superficial aspects of an educational procedure. This type of publicity must be used with the utmost caution; otherwise there is a risk of its distorting school broadcasting, propagating an image of it which may be attractive, but which is misleading; of deflecting it from its legitimate ends and transforming it into a mere vehicle for school entertainment. Well-conducted and closely supervised, however, it can prove an important factor in propaganda for school broadcasting.

Contacts between radio and the schools are also made through *programme pamphlets*. The latter play so important a part in developing trust and confidence and as an instrument for the proper utilization of broadcasts in the class, that we are justified in dealing with them separately on the same footing as microphone propaganda and direct or indirect contacts.

Programme pamphlets are an essential instrument of school broadcasting; they establish a permanent link with the schools, to which they bring echoes of the studio's work.

As media for establishing co-operation, such pamphlets must conform to certain conditions. While every well-organized system of school broadcasts publishes one or more programme pamphlets, all too often they concentrate exclusively on the presentation of the programmes of school broadcasting; all too often they neglect the teacher and concern themselves only with the pupils. They are addressed to the pupils, and it is the pupils whom they seek to please. Yet once it is understood that the main value of school broadcasts does not lie in the broadcasts themselves, but in the use which the teacher makes, or can make, of them, it follows logically that the pamphlets should be addressed in the first instance to the teacher.

The pamphlets should, of course, include details of the programmes and their objects. But there should also be serious articles on the general and specific aims of school broadcasts, discussions on how to use the service, or of the difficulties met with by radio personnel in education. More still, their columns should be open to the point of view of the teachers; space should be reserved for the free discussion of important questions. Like the broadcast itself, the programme pamphlet should be the tangible result of co-operation established and consolidated between radio and the school; no more than the broadcast itself should the programme pamphlet seem to have been imposed from above. Both broadcasts and publications are the joint responsibility of radio personnel and teachers; otherwise they will be a source of reserve and suspicion.

In addition, however, the pamphlets should have a part to play in the utilization of the broadcast.

EFFECTIVE UTILIZATION OF THE BROADCAST

The use made of broadcasts is one of the basic elements in school broadcasting; without this essential "follow-up" the broadcast will lose its effectiveness, and even its *raison d'être* as an educational medium; left to itself, without the consolidating action of the teacher, it leaves hardly a trace on the child mind.

Hence, the closest attention should be devoted to the teachers' use of broadcasts, and to securing conditions favourable to the accomplishment of this essential task. It must be frankly admitted that teachers are untrained for this task.

Accordingly the teacher must be put in a position to follow up the broadcast and to use it for his teaching. Radio itself can do this in part, but without action by the educational authorities, which have here an important part to play, radio cannot resolve the problem in its entirety. Radio can play its part through its programme pamphlets and broadcasts teachers; the educational authorities must concern themselves actively

with receiving equipment, with the training of staff and with the production of syllabuses leaving a place for radio.

In the utilization of broadcasts for teaching ends, programme pamphlets serve two purposes: firstly they define the educational significance of the individual broadcast in the School Broadcasting programme; and secondly they provide the fullest possible background to those broadcasts.

A particular broadcast has a particular purpose; its place in the series of programmes is not fixed by chance, the material it presents has been deliberately chosen; the information it provides, is of a special character determined for definite reasons, whether they be good or not; the surveys it gives have been carefully planned; its scope and its definition have been fixed on a reasoned basis. In short, it is the result of intelligent work, taking account of the purpose to be achieved, the means employed, the subject-matter, the audience for whom it is intended, etc.

The explicit recognition of this is surely desirable, if only to enable the teacher to understand and to grasp the exact meaning of the broadcast; it is hard indeed without prior warning or any "instructions for use" to find oneself trying to tackle a broadcast whose content escapes one. We all know that teaching relies as much upon a thorough grasp of the subject as upon the erudition supplied by books. Programme Pamphlets must supply this understanding.

They should also, however, give varied background information about the subject of the broadcast, so that, by reference to them, the teacher may find matter for exploiting it in his teaching and may prepare to answer the questions with which his pupils will ply him at the end of the programme. Bibliographies dealing with basic and specialized works, visual illustrations to supplement what is heard, miscellaneous information, summary tables, etc. — there is a vast field which the radio pamphlets may usefully prospect. With such an abundance of information, the teacher will be able to find everything he needs to draw profit from an educational broadcast; he will not appear to his pupils less learned or less interesting than the school broadcast; he will be able, at a given time, to re-establish the force of his own personality in expanding the broadcast programme, and import an individual character to teaching which is perforce collective. Lastly—and this is a valuable result, although indirect and subsidiary—the teacher particularly isolated in country districts will be able to draw on the background information of the radio programmes to build up his own store of information and to use this in his lessons.

Broadcasts for teachers. Once propaganda has stimulated interest and made needs felt, the time comes for a systematic attempt at specialized training, the best form of which is the short broadcast talk, simple and direct, with no literary pretensions.

Such "Notes for teachers" are generally given separately from

the school broadcasts, at a time when teachers can conveniently listen. They deal with general questions, periodically survey the position, answer questions and, in connexion with those questions, give explanations of the problems that are attracting most attention. With the microphone, whose limitations are known, they avoid going too deeply into detail, an operation which must be reserved for pamphlets; they bring out dominant and constant elements, deliberately sacrificing the subsidiary and incidental, however interesting.

At this point direct action by the broadcasting organization to secure efficient use of broadcast programmes comes to an end and the work of school authorities begins.

I shall not say much about *listening equipment* (receiving sets and listening rooms) in schools. Each country solves this problem as it best may: either public authorities pay for the necessary equipment, which rarely happens, or efforts are made privately, by every possible means (collections, competitions, loans—all are chancey) to solve a problem which is essentially one of finding the cash.

In either case, responsibility in this matter should not be shifted: it is for the school authorities, official or independent as the case may be, to equip the schools they control for satisfactory listening, this being teaching in the strictest sense; the responsibility of the broadcasting organizations is to arouse interest in this most important problem and to prevail upon the school authorities to do what they can.

We must now consider the problem of the *professional training of teachers* in the adequate and intelligent utilization of broadcasts. The problem is acute today because of the great development of school broadcasting. If education for all has necessitated the prior systematic training of teachers, so does the use of school broadcasting necessitate special training, in order that results achieved in education may be commensurate with the investment of money and effort; in order, too, that broadcasting, left to itself and through lack of action or mistaken handling by the teacher, may not bring harmful consequences which would throw the whole work of education into disorder.

One thing is axiomatic in school broadcasting, and it cannot be repeated too often: the broadcast must not be left to find its own way into the classroom: it must be taken in hand by the teacher, and if his use of it is to give the best results he must be initiated in the employment of this new technique.

All the means we have so far come across have their part to play in this initiation; but that part is necessarily limited. Only methodical training when the teacher is studying for his career can ensure results and make the other means fully effective, since they will thus have a ready-sized canvas to work on. Action by the broadcasting organization itself to ensure proper use of a programme rests on shaky foundations unless teachers have some appreciation of radio as an instrument.

It would be foolish to hope that radio, with its pamphlets and Notes for Teachers, can give proper professional training; at the most it can only give practical advice, which will be understood and used to the extent that teachers have a general knowledge of educational broadcasting, acquired, at the appropriate time and place, in the course of their professional training.

The syllabuses of training colleges or universities are at the moment near saturation point from the extent and variety of the specialist disciplines required in the professional training of teachers. If educational broadcasting is to be given a place, so must educational films, for both are teaching auxiliaries, and accordingly radio's share will be limited and confined to essentials, which amount in practice to the following: the radio as a means of expression in general, and the radio as a means of education in particular, with some practical illustration of the theory.

Confined to such general lines, the necessary instruction would not overload the syllabus of training colleges, would require little time and would be inexpensive; it would nevertheless provide a sufficient grounding to make radio's contribution toward the proper educational use of broadcasts effective. That contribution could thus be entirely practical and realistic, without being burdened by theoretical explanations.

But all this work by school authorities and broadcasting organizations might be in vain if school broadcasting had not its own special place and a clearly defined part to play in the general scheme of education. *In drawing up syllabuses, school broadcasting should not be overlooked.*

As things now are, school broadcasting is seldom anything but a foreign element in the ordinary work of the school; it is not an integral part of that work, so long as organization is governed by premises and policies taking no account of radio. The school syllabus and the radio programme are prepared independently: contact is not established between them until afterwards, when the school syllabus is already fixed. That syllabus is an element which the broadcasting organization cannot alter; the radio has to fall in as well as it can with a *fait accompli* in which it has had no say.

If we wish broadcasts to be used to the full, they must become an integral and necessary part of the teaching in schools, one of its constituents. In preparing school syllabuses, educational authorities must allow a place for subjects dealt with by the radio, and define the part to be played by broadcasting in relation to the subjects taught in school and the general educational objectives. In this way, school broadcasting will be truly auxiliary teaching.

The problems of fitting broadcasts into school work would be solved if teachers had *recording apparatus*. In that case, school broadcasts could be used as and when the teacher wish-

ed; they would find their rightful place in the work of education and could be inserted into the teaching programme at the appropriate moment.

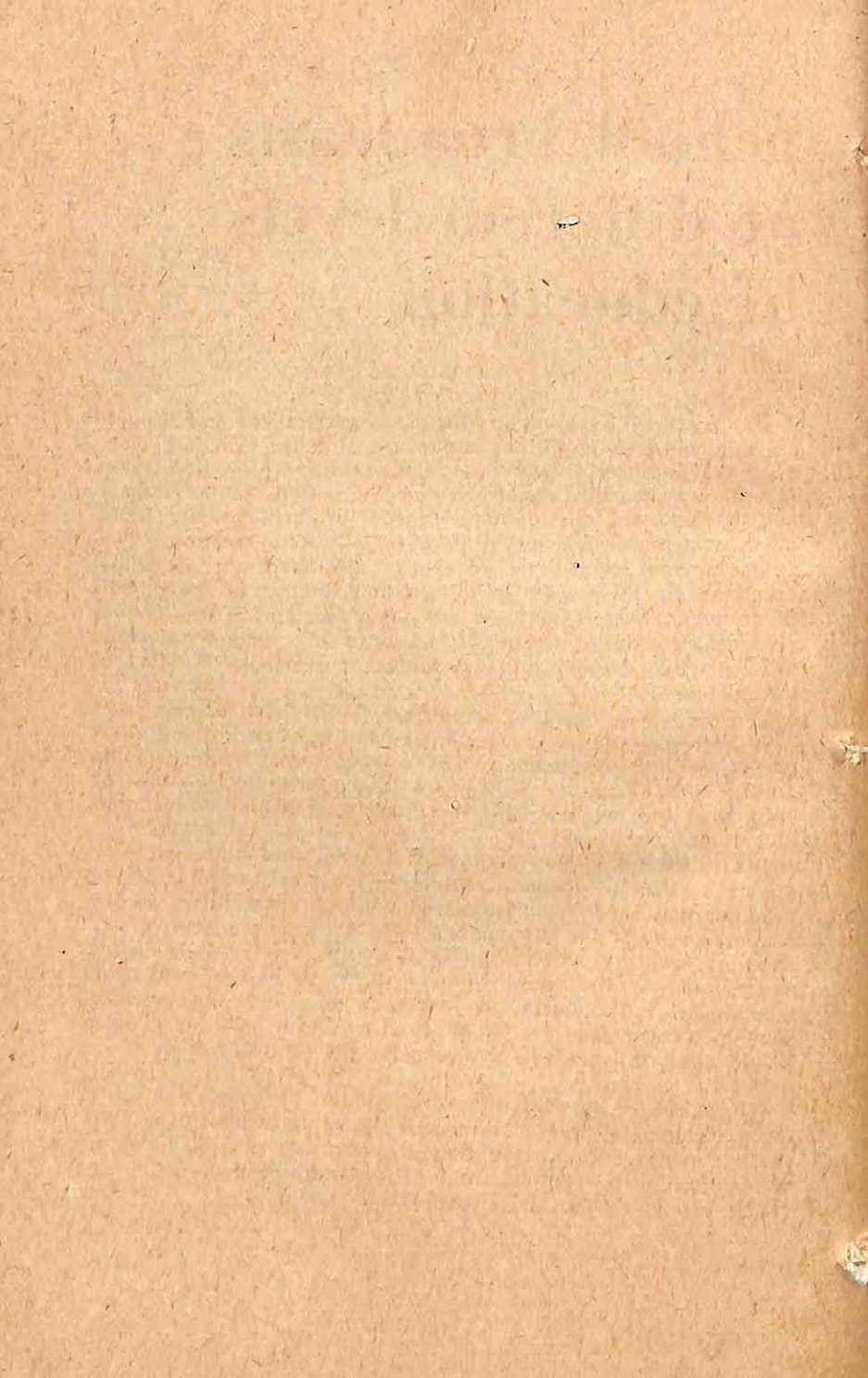
Furthermore, the possibility of recording broadcasts would leave the teacher an entirely free choice of material; he could "cut" a broadcast to suit his needs, leave out what did not serve his purpose and hold over a particular part until later. He would recover complete liberty of action in this respect, and school broadcasting would no longer be something imposed on him from without.

Lastly, by recording, it would be possible to overcome the greatest drawbacks of broadcasting: the loss of the listener's attention and impossibility of going back over the ground. With a recording the teacher would be able to interrupt the broadcast whenever he thought necessary, either to revive flagging attention or to give the necessary explanations; in the same way he could, if necessary, repeat it once or even twice from a particular point if he found it had not been understood.

Lastly, he would be free to build up a library of informative and illustrative recordings, which would take its place beside the printed library.

A broadcast would no longer be ephemeral; it would offer every class vast possibilities for instruction at comparatively small cost, which would be more than made up for by the fact that the broadcast could be heard several times.

It must, however, be realized that recording would cause a revolution in present ideas of school broadcasting. For instance, broadcast material might be solely for the teacher's use. The form of presentation of the broadcast would have less importance; broadcasts could be made outside school hours; they could take place before the opening of the school year and they could be compressed into a very short time.



School broadcasts at different levels of education

So far we have examined radio as an instrument and brought out its merits and limitations as a means of expression and education. We next scrutinized the relationships which necessarily develop between the school broadcasting system, school authorities, teachers, school audiences regarded as entities, school syllabuses in general, and the ultimate objects for education.

The special conditions governing the operation of school broadcasting, arising out of adventitious factors in the schools themselves, have so far been left out of account. These factors give a class a living personality likely to offer strong resistance to any school broadcasting system that overlooks the fact of its existence.

The factors in question arise from the division of education into three stages: primary, secondary and university (the kindergarten is here disregarded). The work at every stage depends on the age and mental capacity of the pupils, the standard of culture of the teachers and that stage's particular educational objectives.

Just as the forms and methods of conventional education vary with the different academic levels, so too must the aims of the school broadcasts vary. Radio's educational possibilities do not have the same value in primary as in secondary or university teaching, and its contribution will not be needed—and hence appreciated—to the same extent in all. To find its proper level, educational radio must often curb its ambitions and sacrifice some of its potentialities, which, if carried over into the schools, would come into useless conflict with the established order or outlook.

We must now turn to this aspect of the problem, and draw the parallel between the radio and the actual school class. We shall consider successively how the age and mental capacity of the pupils, the particular educational objectives and culture of the teachers affect the broadcast.

The school age

A first point to be noted is that in school broadcasts, which are collective and not individual instruction, no distinction is made between children's mental level and physical age, the latter being assumed to indicate a particular average mental age regardless of the actual variations from the norm. In the case of a broadcast designed for a particular school age group, it is the teacher's responsibility to see that the children who listen to it are of the right mental age.

With this proviso, experience both in school and general broadcasting demonstrates that radio is perfectly suitable for all school age groups. All radio programmes include general children's broadcasts without age distinction, and when these are well put over they are most successful.

The radio broadcast has to be very carefully adapted to the age and consequently to the mental capacity of its listeners. Much understanding, skill, flexibility and imagination are required. Without aid of sight, touch or movement, contact must be made with intelligences newly awakened as well as with those fully formed.

Experience shows that these very real difficulties are far from being insuperable when radio has a true appreciation of its own possibilities and limitations. For instance, it has been successful in reaching even so inaccessible a group as the three to six year old kindergarten children.

This triumph repeated in several countries shows that the fundamental question is not: "What ages are suitable for school broadcasts" but: "What methods, forms, and subjects should be adopted to make broadcasts accessible for any particular school age?"

There is no satisfactory reply to this question to guide those who are being trained in the techniques of school broadcasting. A few suggestions may be made: The illustrated story is probably most suitable for children of pre-school age; the radio play for those of primary school age, the feature programme for boys and girls at secondary school and the radio lecture for university students. But all these, though valid deductions from experience, are no more than vague indications and leave too much to individual initiative and imagination.

My own wish is for an enquiry, using psycho-technical procedures, to determine as accurately as possible what types of broadcast are the most suitable for children in each group. That is an important task to be done; if successful, it will save school broadcasts from empirical methods, which, though formerly a stimulus to much research and experiment, today threaten to become an obstacle to progress. It is time that we worked out scientifically a suitable methodology for each age group; details of all the experiments carried out in this field

for many years past should be analysed, checked by carefully designed tests and systematic investigation, and grouped according to their characteristics and results.

The general methodology of radio and the special methodology of school subjects are already pretty firmly established. A methodology for age would round them off and give radio an instrument of the greatest effectiveness and close the circle of pedagogical subjects.

The aims of education

The second distinguishing feature of the various school stages is the particular educational objective set for them. This objective, like the children's ages, reacts on the work of school broadcasting; its nature and scope determine to a very large extent the part to be played by radio education and the methods to be used. What is true for the subjects in the syllabus is also true for the objectives; radio cannot in the last connexion usurp the rights of the schools while in the syllabus it appears as an auxiliary and aid. It is therefore important that its field of activity in the various school grades should be defined in relation to the educational objectives to which the class-work is directed.

So far as *primary education* is concerned, we may say that its object is to inculcate a practical and, up to a point, mechanical knowledge of the subjects included in the syllabus.

Reading, writing, arithmetic, observation, action are the fundamental themes around which the subjects taught in primary education are grouped. In each case the object to be sought is not to awaken thought, but to direct attention to the outer surface only, the superficialities if you prefer it, giving the child a practical or merely utilitarian knowledge calculated to fit him for a place in society at the "order-taking" level and to grasp the general lines of his environment.

Reading, writing and arithmetic, to which nature study and civics, games and handicrafts have been added in the last fifty years, do not go beyond the stage of elementary perception — both for technical reasons and because of the shortage of time available — and seldom reach the heart of the matter. Primary education may be described as the level of empirical, pragmatic and detailed knowledge.

This is a fact which school broadcasting has to keep constantly in mind in determining its line of action. The choice of the subjects to be taught is directly and decisively influenced by it.

There is, however, another consequence with repercussions on the attitude of school broadcasting in primary education and the aims which it may legitimately adopt.

Primary school broadcasting should do no more than back up the teacher's work along its own lines and within its own bounds; it should aim at being primary education only and

should confine itself cautiously to that end, sacrificing, if need be, some of its potentialities and some of its ambitions.

So far as *secondary education* is concerned, its general purposes are to achieve a reasoned understanding of the subjects in the syllabus, and, to some extent, to introduce the pupils to the scientific method.

At the secondary school stage, school activity is organized around the acquisition of general knowledge of Nature and Society and a conscious mastery of language and mathematics. In this instance, the purely practical field, to which action is deliberately confined in the primary school, is abandoned, and methodical and systematic reflection is introduced as a factor in the acquisition of knowledge. It is no longer a question of using mechanically the necessary knowledge but of understanding the structure of the subject and the effective or logical links which give it unity and cohesion, or of grasping the idea of abstract, general "laws" expressed in precise terms. To achieve these purposes, secondary education must accustom the pupils to critical thought and introduce them to the basic methods of science, without, however, demanding more than adolescents can normally accomplish. The scope of the syllabus and the depth of understanding are determined by educational psychology. The syllabus includes the basic ideas of the fundamental sciences; the purpose of education is a reasoned understanding, based on the exercise of the critical faculty and on the great laws of scientific investigation.

In fact, school broadcasting in secondary education can only serve to illustrate a course, which, even without it, could be given adequately and achieve its own purposes adequately. This is, indeed, to strike a modest note, but the value of the radio contribution should not be under-estimated. I have in mind the interesting illustrations which the radio can provide for courses in literature, foreign languages, music and for everything concerned with the training of feeling and taste. In this respect, broadcasting is a very useful instrument in secondary education, to which it brings easy illustrations in sound, carefully presented in the best possible conditions: concerts by the finest orchestras, plays with the best actors, extracts from books presented by the best readers, explanations given by the best-known experts, to mention only a few instances. The teacher would continually find new opportunities to illustrate his teaching with striking and persuasive examples.

In this connexion, it is important to note that, school broadcasting in secondary education being illustrative, it is not necessarily concurrent with instruction by the teacher as in primary education. In addition to the part it plays directly in class — which is generally very small because of the congestion of the school syllabus and its lack of flexibility—broadcasts intended for the general public which have an educational value (concerts, plays, etc.) can be utilized. Such programmes may

be heard at home on the teacher's instructions and used in class teaching when appropriate. This method, based on the systematic use of the cultural material in general radio programmes, parallel with and in addition to the broadcasts specially arranged for schools, gives broadcasting for secondary schools a degree of flexibility in application which easily gets around the obstacles confronting it, such as crowded syllabuses, overcharged time-tables, ill-timed breaks in the sequence of instruction, etc.

We now come to *university education*. The ultimate purpose of such education is achieved when the student has acquired a scientific understanding of the special subjects in his syllabus and is in a position to undertake scientific research.

This statement suggests that school broadcasting has no place in universities and equivalent foundations. Is such a belief justified?

One point, first of all: there are a number of broadcasts calling themselves 'university programmes'. 'Radio University' and 'University of the Air' are often found as titles. In fact, however, if we remember the definitions we have given, none of these programmes can properly be called school broadcasts, as they are not heard in lecture halls or utilized by lecturers. They are generally designed for a cultured audience of students or adults in their own homes; they are never part of a university syllabus or course.

The syllabuses and time-tables of university classes are never suitable for the inclusion of educational broadcasts; the number and variety of the courses constitute insuperable obstacles; the very nature of university work, in formal lectures and tutorial groups or laboratories, is against the introduction of broadcast lessons. At the university level, educational broadcasting in the form we know it in primary and secondary education can have no part to play. It has no place in the fostering of a thorough and scientific understanding of specialized disciplines. The priceless element here is the teacher's own contribution, his unquestionable and unquestioned authority, and his personality. Apart from formal classes, however, the radio can serve knowledge by helping and advising students, in close collaboration with the academic authorities. That is no mean part to play.

The cultural level of the teachers

This is the third factor which, with the age of the children and the objective set, helps to constitute the specific character of each level of education; it is the necessary consequence of the other two.

The general cultural level of the teachers is determined in relation to the other two and to meet their requirements. The primary teacher does not need so wide a culture as the second-

ary teacher, and the latter need not carry his study so far as the university lecturer, for both are dealing with children or adolescents, whose ability to acquire knowledge is limited by their age; and objectives of every level of education are strictly limited.

The fact that each type of teacher has a different sort of culture confirms the view that the wider the field of culture, the less necessary are school broadcasts, the higher we go in the hierarchy of education, the narrower the field of educational broadcasting becomes, since the need for supplementary teaching becomes less and less evident. When the teacher is a man of wide culture, he finds therein all he may require; seldom only does he need to call on outside assistance. Moreover, of necessity, secondary education relies up to a point, and higher education to a very large extent, on specialists with the highest qualifications in and grasp of their particular subject and who are familiar with the best methods of teaching it. The specialist is the master of his subjects; he does not like the intrusion of an external factor, not even one of proved competence, in his work. Rightly or wrongly, this psychological element operates against the use of educational broadcasts in secondary and university education. The organizers of radio education must remember this if they do not wish to risk scorn and opposition; they must curb their ambitions, however convinced they may be that they can render valuable service at every stage of education.

